



DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE WEST
1455 FRAZEE RD, SUITE 900
SAN DIEGO, CA 92108-4310

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MAR 2 2011

Mr. Mark Ripperda (SFD 8-1)
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Mr. Ryan Miya
Department of Toxic Substance Control
700 Heinz Avenue, Bldg. F, Suite 200
Berkeley, CA 94710

Mr. Larry Morgan
California Department of Public Health
1616 Capitol Avenue, MS 7402
P.O. Box 997377
Sacramento, CA 95899-7377

Dear Regulatory Team Members:

Please find enclosed the Final Removal Action Completion Report (RACR), Parcels UC-1 and UC-2, Hunters Point Shipyard, San Francisco, California. Response to Comments (RTCs) from the draft version of this report is included as Appendix K. Technical review of the enclosed report has been completed by the Navy's Radiological Affairs Support Office.

The Navy requests a letter of concurrence on the enclosed RTCs and the Final RACR for Parcels UC-1 and UC-2 **no later than Monday, April 4, 2011**. If you have questions regarding the enclosed report, please contact Mr. Chris Yantos at (619) 532-0912, or Mr. Keith Forman at (619) 532-0913.

Sincerely,

KEITH FORMAN

BRAC Environmental Coordinator

By direction of the Director

Enclosures: 1. Final Removal Action Completion Report, Parcels UC-1 and UC-2, Hunters Point Shipyard, San Francisco, California.

Copy to:

Diane Silva (2 Hard Copies, 1 unbound, CD)
NAVFAC Southwest (Code EV33)
Naval Base San Diego
2965 Mole Rd., Bldg. 3519
San Diego, CA 92136

Laurie Lowman (3 Hard Copies and 3 CDs)
Building 1971
NWS P.O. Drawer 260
Yorktown, VA. 23691-0260

Amy Brownell (CD Only)
SF Department of Public Health
1390 Market St., Suite 210
San Francisco, Ca 94102

Elaine Warren (CD only)
Office of the City Attorney
City Hall, Room 234
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102-4682

Leslie Lundgren (Hard Copy and CD)
33 New Montgomery Street, Suite 2000
San Francisco, CA 94105

Dorinda Shipman (Hard Copy and CD)
Treadwell and Rollo
555 Montgomery St., Suite 1300
San Francisco, CA 94111

Stephen Proud (CD Only)
Lennar/BVHP
1 California St., Suite 2700
San Francisco, CA 94111

Stan DeSouza (CD Only)
1680 Mission St., First Floor
San Francisco, CA 94103-2414

Karla Brasaemle (Hard Copy and CD)
90 New Montgomery St., Suite 710
San Francisco, CA 94105

Janice Torbet (Hard Copy and CD)
100 Larkin Street
Gov. Information Ctr., 5th Floor
San Francisco, CA 94102

Michael Sharpless (CD Only)
Paul Hastings, et al.
55 2nd Street, 24th Floor
San Francisco, CA 94104-2635

Tamara Davidson (CD Only)
SF Health Department
101 Grove Street, Rm 217
San Francisco, CA 94102

Leon Muhammad (Hard Copy and CD)
5048 3rd Street
San Francisco, CA 94124

Linda Malvino (Hard Copy and CD)
Mactec Engineering and Consulting, Inc.
5341 Old Redwood Highway, Suite 300
Petaluma, CA 94954

Michael McGowan (CD only)
1331 Evans Avenue
San Francisco, CA 94124

Randy Brandt (CD Only)
475 14th Street, Suite 400
Oakland, CA 94612

Kristine Enea (CD Only)
951 Innes Avenue
San Francisco, CA 94124



**Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, California 92108-4310**

**CONTRACT No. N62473-07-D-3211
CTO No. 0018**

**FINAL
REMOVAL ACTION COMPLETION REPORT
March 2, 2011**

DCN: ECSD-3211-0018-0174

**PARCELS UC1 AND UC2
HUNTERS POINT SHIPYARD
SAN FRANCISCO, CALIFORNIA**

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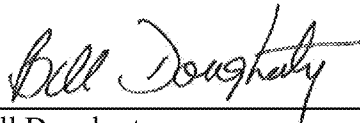
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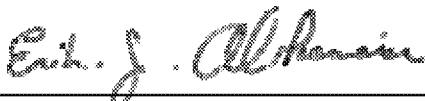
1230 Columbia Street, Suite 750
San Diego, California 92101-8536



Bill Dougherty
TtEC Project Manager

3/01/2011

Date



Erik Abkemeier, CHP, PE, CSP, CHMM
TtEC Radiation Safety Officer

3/01/2011

Date

EXECUTIVE SUMMARY

The U.S. Department of the Navy (DON) directed the preparation of this Removal Action Completion Report (RACR) to describe and summarize the Building 819 Final Status Survey (FSS) and Utility Corridor 1 (UC1) and Utility Corridor 2 (UC2) storm drain and sanitary sewer removal actions at Hunters Point Shipyard (HPS) located in San Francisco, California. The purpose of the storm drain and sanitary sewer removal actions was to protect the public health, welfare, and the environment from actual or potential releases of radiologic contaminants, meet the currently specified removal action objectives, and achieve the unrestricted radiological release of Parcels UC1 and UC2. This RACR does not address non-radiological contamination on Parcels UC1 and UC2 or include or affect any other designated HPS parcels.

Parcels UC1 and UC2 are located in the north central portion of HPS and, along with Utility Corridor 3 (UC3), constitute the main traffic corridor through HPS. The topography of the area is hilly with the boundary line separating the San Francisco Redevelopment Agency (SFRA) property from the HPS property located at the fence line on the top of the slope above Fisher and Spear Avenues and Robinson Street, and immediately adjacent to the east end of Building 101. In addition, flat lowlands are located on the southern and western portions of Parcels UC1 and UC2.

Parcel UC1 is approximately 3.9 acres in area and extends the length of Spear Avenue until it connects to Parcel UC3 (Crisp Road) on the west and Parcel UC2 on the east. Parcel UC1 incorporates Buildings 819 and 823 at its western end. Parcel UC2 is approximately 3.9 acres in area and encompasses a section of Robinson Street and the length of Fisher Avenue. The boundary between the SFRA property and Parcel UC2 extends along the exterior east wall of Building 101 with the associated asphalt parking lot located within Parcel UC2.

Based on its operational history and site-specific investigative data, the DON determined that radioactive contamination in soils, debris, slag, buildings, and the storm drain and sanitary sewer system at HPS required a response action. The DON deliberated over several removal options before physical removal and proper off-site disposal was selected as the only viable alternative.

The present-day configuration of the HPS storm drain and sanitary sewer systems is the result of an evolutionary process. The combined systems grew in sections and then underwent a series of separation projects to provide for installation of dedicated sanitary sewer piping and pump stations that would discharge sanitary sewer effluent off-site. Complete separation of the combined systems was never achieved, and inspections revealed that cross-connections between the two systems may still exist. Due to the evolutionary nature of the separation process, radiological contamination from the same sources may have impacted piping and other components of both systems.

A total of 42 storm drain line segments and 57 sanitary sewer line segments were excavated during the removal actions. Fieldwork for the Parcels UC1 and UC2 removal actions were initiated in March 2009 and continued through July 2010 during which a total of 20 survey units were excavated and delineated. In total, 6,407 linear feet of trench (inclusive of excavated soil and pipe/manholes) was excavated. The maximum depths of the excavated trenches ranged between 2 feet and 20 feet below ground surface. The total area of the exposed trench surfaces following the completion of excavation was 13,861 square meters with 6,141 linear feet of trench. The storm drain and sanitary sewer removal actions resulted in 11 trench survey units (SUs) identified as SU133, SU139, SU140, SU146, SU147, SU148, SU150, SU164, SU167, SU168, and SU171 in Parcel UC1 and 9 trench survey units identified as SU136, SU137, SU138, SU141 through SU145, and SU149 in Parcel UC2.

Excavated soil from Parcels UC1 and UC2 was transported to selected screening pads in Radiological Screening Yard 2 (RSY2) for dewatering and radiological processing. The radiological survey process resulted in a 100 percent surface scan. Radioactive material identified during the screening process was collected, segregated, and stored in appropriate containers for subsequent disposal by the DON's low-level radiological waste (LLRW) contractor. Areas of excavated soil placed on the screening pads that showed the potential presence of radiation levels greater than the established investigation limits were further evaluated, and biased soil samples were collected, as appropriate. Any contamination identified was characterized and remediated. FSS soil samples were collected, evaluated, and with the concurrence of the Radiological Affairs Support Office, segregated for use as backfill or for off-site disposal. A total of 2,631 soil samples were collected from the Parcels UC1 and UC2 storm drains and sanitary sewer excavated soil during processing in RSY2. During radiological processing in RSY2, approximately 876 cubic yards of soil from the screening pads that exceeded the release criteria was remediated. The remediated soil was placed in LLRW bins for disposal by the DON's radiological waste contractor.

During the removal action activities, a total of 798 soil samples were collected from the 20 trench survey units that resulted from the excavation of the storm drain and sanitary sewers in Parcels UC1 and UC2. Of these 798 samples, 438 were investigative and 360 were systematic FSS soil samples. Based on the soil sample analytical results, approximately 262 cubic yards of soil was remediated from the excavated storm drain and sanitary sewer trenches. The remediated soil was placed in LLRW bins for disposal by the DON's radiological waste contractor. A minimum of 18 discrete FSS soil samples were collected from each of the 20 trench survey units and analyzed during the removal action activities. In addition, radiological surface scans were performed on the trench surfaces, and direct or static measurements were collected from each of the 18 systematic FSS sample collection locations and evaluated for the potential presence of radiological contamination.

Sediment samples were collected from piping (pipe and manholes) during the Parcels UC1 and UC2 removal actions when a sufficient volume of material was available and submitted to the laboratory for analysis. A total of 55 sediment samples were collected from pipe, and 10 sediment samples were collected from manholes during the Parcels UC1 and UC2 removal action activities. Following laboratory analysis by gamma spectroscopy, 9 manhole sediment samples and 26 pipe sediment samples did not indicate the presence of radioactivity above the release criteria. While the majority of the pipe excavated from Parcels UC1 and UC2 disintegrated upon removal and was transferred along with the excavated soil for processing in RSY2, the remaining excavated pipe sections along with the bricks and/or concrete that formed the sidewalls of the 35 excavated manholes was placed in LLRW bins for disposal by the DON's radiological waste contractor.

Dose and risk modeling using the most current version of RESRAD was performed for each of the 20 trench survey units excavated in Parcels UC1 and UC2 using the larger of the method detection limit or reported activity concentrations. The results of the modeling efforts for each of the 20 trench survey units in Parcels UC1 and UC2 indicated that the residual activity following the removal actions met the U.S. Environmental Protection Agency criterion of less than 3×10^{-4} , which supports free release. Based on the dose and risk modeling results, the highest net residual dose to workers or members of the public as a result of exposures to radioactive material in soil on Parcel UC1 was identified in SU171 at 5.702 millirem per year (mrem/y) with an excess lifetime cancer risk of 9.317×10^{-5} , and on Parcel UC2 in SU142 at 5.896 mrem/y with an excess lifetime cancer risk of 9.278×10^{-5} .

Buildings 819 and 823 are included within the Parcel UC1 property boundary. Building 819 was the former sewage lift station and Building 823 housed the emergency generator for Building 819. Building 819 was identified as a potentially radiologically impacted building; however, Building 823 has never been associated with the use or storage of radioactive material. An FSS was performed for Building 819 and the results were submitted to the DON and the regulatory agencies in September 2007. The analysis of the collected field data showed that the residual radioactivity in Building 819 met the release criteria and the structure was ready for unconditional, unrestricted use. The California Department of Toxic Substances Control and the California Department of Public Health, Environmental Management Branch concurred with the unrestricted release of Building 819 on October 28, 2009.

Following the completion of the removal actions including backfilling of the trench survey units, site restoration activities were performed for Parcels UC1 and UC2. These activities included the asphaltting of the road surfaces and installation of a temporary swale system to manage stormwater flow.

The DON met its stated radiological removal action objectives to prevent or minimize exposure to ROCs in concentrations that exceed remediation goals for all potentially complete exposure

pathways.. The completed remedial actions were protective of human health and the environment, complied with federal and state statutes and regulations that are applicable or relevant and appropriate, and were cost-effective. In addition, the removal actions resulted in a reduction of the potential risks to levels below remediation goals associated with potential exposures to the radionuclides of concern. Based on the results of the Parcels UC1 and UC2 storm drain and sanitary sewer removal actions, residual dose and risk modeling efforts, implementation of the as low as reasonably achievable (ALARA) process, and the radiological survey and release of Building 819, the classification of “radiologically impacted” may be removed from Parcels UC1 and UC2 and no further actions are required.

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Appendix B	IR-36 and Chemical Analytical Results (on CD only)
Appendix C	Sediment Sample Laboratory Analytical Reports (on CD only)
Appendix D	Archaeological Report (on CD only)
Appendix E	Parcel UC1 Survey Unit Project Reports (Trench Survey Units 133, 139, 140, 146, 147, 148, 150, 164, 167, 168, and 171) (on CD only)

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Appendix I	Compaction Testing (on CD only)
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ABBREVIATIONS AND ACRONYMS

ALARA	as low as reasonably achievable
AM	Action Memorandum
ARAR	applicable or relevant and appropriate requirement
ASTM	American Society for Testing and Materials
bgs	below ground surface
CDPH	California Department of Public Health, Environmental Management Branch
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cm ²	square centimeter
Cs-137	cesium-137
CSM	Conceptual Site Model
CTO	Contract Task Order
DON	Department of the Navy
dpm	disintegrations per minute
DTSC	(California) Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
ES	excavated soil
FSS	Final Status Survey
HDPE	high-density polyethylene
HPS	Hunters Point Shipyard
HRA	Historical Radiological Assessment
IR	Installation Restoration
LLRW	low-level radioactive waste
m ²	square meter
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDL	method detection limit
mrem/y	millirems per year
NAVSEA	Naval Sea Systems Command
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NRC	Nuclear Regulatory Commission

ABBREVIATIONS AND ACRONYMS

(Continued)

NRDL	Naval Radiological Defense Laboratory
pCi/g	picocuries per gram
PVC	polyvinyl chloride
Ra-226	radium-226
RACR	Removal Action Completion Report
RAO	removal action objective
RASO	Radiological Affairs Support Office
RCA	radiological control area
ROC	radionuclide of concern
ROD	Record of Decision
RSY2	Radiological Screening Yard 2
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act of 1986
SFRA	San Francisco Redevelopment Agency
Sr-90	strontium-90
SU	survey unit
SUPR	Survey Unit Project Report
SUPRA	Survey Unit Project Reports Abstract
TtEC	Tetra Tech EC, Inc.
UC1	Utility Corridor 1
UC2	Utility Corridor 2
UC3	Utility Corridor 3
VCP	vitreous clay pipe
VSP	Visual Sample Plan

1.0 INTRODUCTION

The U.S. Department of the Navy (DON) directed Tetra Tech EC, Inc. (TtEC) to prepare this Removal Action Completion Report (RACR) to describe and summarize the Building 819 Final Status Survey (FSS) and Utility Corridor 1 (UC1) and Utility Corridor 2 (UC2) storm drain and sanitary sewer removal actions at Hunters Point Shipyard (HPS) located in San Francisco, California. This RACR was prepared to document the results of the radiological work performed on Parcels UC1 and UC2 to protect the public health, welfare, and the environment from actual or potential releases of radiologic contaminants and document the results of the implemented radiological removal remedies selected in the final Parcels D-1 and UC1 Record of Decision (ROD) (DON 2009a) and the final Parcel UC2 ROD (DON 2009b). This RACR does not address non-radiological contamination on Parcels UC1 and UC2 or include or affect any other designated HPS parcels.

The FSS and storm drain and sanitary removal action activities were directed by the DON, Naval Facilities Engineering Command Southwest, and the Radiological Affairs Support Office (RASO) under Contract No. N62473-08-D-8823 and Contract Task Order (CTO) 0002 and CTO 0003. Prior to April 27, 2009, the excavated soil from the UC1 and UC2 trenches was processed in the Radiological Screening Yard 2 (RSY2) under Contract No. N68711-98-D-5713 and CTO 0072. However, the majority of the excavated soil was processed in RSY2 under Contract No. N62473-07-D-3211 and CTO 0018. The Building 819 FSS report was prepared under Contract No. N62473-06-D-2201 and CTO 0006. This final RACR was prepared under Contract No. N62473-07-D-3211 and CTO 0018.

Survey Units 134 and 135 were excavated, sampled, processed, and backfilled under CTO 0002. Although the work was performed under CTO 0002, these two survey units were located within the Parcel D-2 property boundaries and were included in the final Parcel D-2 RACR under CTO 0072. No further discussion related to either of these two survey units will be included in this RACR.

The storm drain and sanitary sewer removal actions and the Building 819 FSS were performed in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The DON and the U.S. Environmental Protection Agency (EPA) jointly selected the remedies for Parcels UC1 and UC2 with the concurrence of the California Department of Toxic Substances Control (DTSC) and the San Francisco Bay Regional Water Quality Control Board.

1.1 HUNTERS POINT SHIPYARD LOCATION AND DESCRIPTION

The HPS site lies entirely within the corporate boundaries of the City and County of San Francisco, California. HPS encompasses approximately 848 acres, including about 416 acres on land situated on a 2-mile-long promontory projecting southeastward into San Francisco Bay within the southeast corner of the City of San Francisco. The remaining 432 acres constitute the adjacent offshore areas (Figure 1-1).

In 1992, the DON divided HPS into five contiguous parcels (A through E) to expedite remedial action activities and land reuse. Parcel F was designated in 1996 to encompass the offshore areas (Figure 1-2). The DON designated the landfill area in Parcel E as Parcel E-2 in September 2004. Subsequently, Parcel A was transferred to the City and County of San Francisco. In July 2008, the DON separated HPS into eight parcels (B, C, D-1, D-2, E, E-2, G, and F) and three UCs identified as UC1, UC2, and UC3 (Figure 1-2). Parcels B, C, D-1, D-2, E, E-2, and G as well as UC1, UC2, and UC3 encompass the onshore areas; a small portion of the onshore areas as well as the offshore areas continue to be designated as Parcel F.

Based on the HPS radiological operational history described in the final Historical Radiological Assessment, Volume II (HRA) prepared by the Naval Sea Systems Command (NAVSEA) in 2004 (NAVSEA 2004) and site-specific investigative data, the DON determined that radioactive contamination in soils and debris at HPS required a response action. This decision is documented in the final Base-wide Radiological Removal Action, Action Memorandum (AM) (DON 2006). The AM was revised and updated to implement the recommendations of the HRA (NAVSEA 2004).

Parcels UC1 and UC2 are located in the north-central portion of HPS and, along with Parcel UC3, constitute the main traffic corridor through HPS, which consists of Robinson Street and Fisher Avenue (Parcel UC2), Spear Avenue (Parcel UC1), and Crisp Road (Parcel UC3) (Figure 1-2). The topography of the area is hilly with the boundary line separating the San Francisco Redevelopment Agency (SFRA) property from the HPS property located at the fence line on the top of the slope and immediately adjacent to the east end of Building 101 (located on the SFRA property). The remainder of Parcels UC1 and UC2 are comprised of flat lowland areas.

1.2 PARCEL UC1 SITE DESCRIPTION

Originally, Parcel UC1 was part of Parcel D. Formerly, Parcel D was one of the designated HPS parcels originally designated for environmental restoration. The DON divided Parcel D into four new parcels identified as Parcels D-1, D-2, G, and UC1 to facilitate potential early transfer. Parcel UC1 is approximately 3.9 acres in area and extends the length of Spear Avenue. It is situated between Parcel UC2 on the east and Parcel UC3 on the west. Parcel D-2 and a portion

of the SFRA property bounds Parcel UC1 on the north, with Parcel G and a portion of Parcel E located to the south (Figure 1-2).

As indicated in the ROD (DON 2009a), Parcel UC1 consists of flat lowlands constructed by placing borrowed fill material from various sources, including crushed serpentinite bedrock from the adjacent highland and dredged sediments. Surface elevations ranged between 0 and 10 feet above mean sea level. The serpentinite bedrock and serpentine bedrock-derived fill material consist of minerals that naturally contain asbestos and relatively high concentrations of arsenic, manganese, nickel, and other metals. The Parcel UC1 ecology is limited to plant and animal species adapted to the industrial environment. The majority of the ground surface on Parcel UC1 is paved. No threatened or endangered species were known to inhabit Parcel UC1 or its immediate vicinity.

Parcel UC1 includes Buildings 819 and 823 and the associated parking and concrete areas. There is approximately 1 foot of separation between the two structures. Building 819 is a 20.5-foot by 19.5-foot, flat-roof, single story, concrete structure housing a former sewage lift station. Historically, Building 819 was identified as a potential radiologically impacted structure. The radiological work performed for this building and its subsequent free release in October 2009 are described in Section 6.0. Building 823, a 22-foot by 28-foot concrete structure that formerly housed the emergency generator equipment for the sewage lift station, was not identified as a radiologically impacted structure in the HRA (NAVSEA 2004).

One Installation Restoration (IR) Program site, identified as IR-36, is associated with Parcel UC1. IR-36 is located at the southwestern corner of Parcel UC1. This IR site, as it relates to Parcel UC1, is discussed in Sections 3.2 and 3.9 of this RACR.

1.2.1 Parcel UC1 Current and Future Land Use

Based on the HPS Redevelopment Plan (SFRA 1997), Parcel UC1 was identified as “mixed use” property that may include residential areas and Spear Avenue will serve as an access street and utility corridor. Currently, Building 819 and Building 823 are vacant.

1.3 PARCEL UC2 SITE DESCRIPTION

Originally, Parcel UC2 was part of former Parcel C. Formerly, Parcel C was one of the designated HPS parcels originally designated for environmental restoration. In 2009, the Navy divided former Parcel C into Parcels C and UC2. There are no buildings or former building sites associated with Parcel UC2.

Parcel UC2 is approximately 3.9 acres in area and encompasses a section of Robinson Street and the length of Fisher Avenue (Figure 1-2). It is bound on the north and east by Parcel C, on the west by the SFRA property, and connects to Parcel UC1 on the south. A section of Parcel UC2

extends northeast into the intersection of Robinson Street and Fisher Avenue, and then turns west along Robinson Street. This section includes the triangularly-shaped asphalt parking lot adjacent to Building 101 on the west side of Robinson Street. Along the west side of Parcel UC2 is a sharp rise of 5 feet to 15 feet that is vegetated with ice plan and annual grass. As indicated in the ROD (DON 2009b), the Parcel UC2 roadway was constructed by placing borrowed fill. The northern and western areas of Parcel UC2, including the Building 101 parking lot, are located on the original promontory with native soil over shallow bedrock. The eastern portion of Parcel UC2 consists of flat lowlands that were constructed by placing borrowed fill material from various sources, including crushed serpentinite bedrock from the adjacent highland. The serpentinite bedrock and serpentine bedrock-derived fill material consist of minerals that naturally contain asbestos and relatively high levels of arsenic manganese, nickel, and other metals. The majority of the surface elevations in Parcel UC2 are between 5 feet and 15 feet above mean sea level. The surface elevations in the northern portion of Parcel UC2 are 20 to 30 feet above mean seal level.

The Parcel UC2 ecology is limited to those plant and animal species adapted to the industrial environment. Because the majority of Parcel UC2 is covered by pavement with little open space for flora and fauna, it has little habitat value for terrestrial ecological receptors. As indicated in the Parcel UC2 ROD (DON 2009b), no threatened or endangered species are known to inhabit Parcel UC2 or its immediate vicinity.

One IR Program site, identified as IR-06, is associated with Parcel UC2. Although IR-06 is located on portions of Parcel UC2 at Robinson Street, no storm drain or sanitary sewer lines were excavated in this area.

1.3.1 Parcel UC2 Current and Future Land Use

Based on the HPS Redevelopment Plan (SFRA 1997), Parcel UC2 was identified as “mixed use” property that may include residential areas, research and development, and future roads.

1.4 PURPOSE AND ORGANIZATION OF REPORT

The purpose of this RACR is to summarize the Parcel UC1 Building 819 FSS and document the Parcels UC1 and UC2 storm drain and sanitary sewer removal action activities performed to complete the selected radiologic remedies identified in the RODs (DON 2009a and 2009b). This RACR is organized as follows:

- **Section 1.0 Introduction** – Section 1.0 provides project information including descriptions of HPS and Parcels UC1 and UC2, the current and future land use of the property, and the purpose and organization of the RACR document.
- **Section 2.0 Background** – Section 2.0 places Parcels UC1 and UC2 within context of HPS by presenting an abbreviated history of the storm drain and sanitary sewer

systems, discussing the transport of radionuclides at HPS, identifying the removal action objectives and remediation goals, and summarizing the various documents that support the radiological work performed.

- **Section 3.0 Storm Drain and Sanitary Sewer Removal Overview** – Section 3.0 provides an overview of the storm drain and sanitary sewer removal actions, describes the procedures for performance of the work, discusses the IR Program site associated with Parcel UC1, and identifies those activities common to each trench survey unit including the processing of excavated material.
- **Section 4.0 Parcel UC1 Storm Drain and Sanitary Sewer Removal** – Section 4.0 details the storm drain and sanitary sewer removal action activities performed for each trench survey unit associated with Parcel UC1 and presents the dose and risk modeling results.
- **Section 5.0 Parcel UC2 Storm Drain and Sanitary Sewer Removal** – Section 5.0 details the storm drain and sanitary sewer removal action activities performed for each trench survey unit associated with Parcel UC2 and presents the dose and risk modeling results.
- **Section 6.0 Building 819 Final Status Survey Results** – Section 6.0 provides a description of Building 819 and its operations history, summarizes the radiological survey results, and discusses regulatory concurrence for free release.
- **Section 7.0 Site Restoration and Temporary Swale Construction** – Section 7.0 describes the site restoration activities performed for Parcels UC1 and UC2 and the installation of the temporary stormwater swale system.
- **Section 8.0 Cost Summary** – Section 8.0 summarizes the costs incurred in performing the Parcels UC1 and UC2 removal actions.
- **Section 9.0 Conclusions and Recommendation** – Section 9.0 presents the conclusions and recommendation for radiological release for unrestricted use of Parcels UC1 and UC2.
- **Section 10.0 References** – Section 10.0 lists the documents and references cited in this RACR.
- **Appendices A through K** – The individual appendices present information and technical data gathered during the performance of the storm drain and sanitary sewer removal actions and the FSS building activities and other documents that support the conclusions and recommendation presented in this RACR.

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2.0 BACKGROUND

The following sections provide an abbreviated history and pertinent background information leading to the development of the HPS Conceptual Site Model (CSM) and removal action objectives (RAOs) for Parcels UC1 and UC2. Also included are brief descriptions of the supporting documents and reports that guided the Parcels UC1 and UC2 removal actions and building FSS work activities.

2.1 HISTORY

The DON obtained ownership of HPS for shipbuilding, repair, and maintenance in 1940. HPS began using radioactive materials in the early 1940s in shipyard operations and Naval Radiological Defense Laboratory (NRDL) research projects. Operations at HPS included ship decontamination, repair, and dismantling activities, which generated radium dial and sandblast grit waste streams. In addition, the DON managed a waste disposal program that included the removal of radioactive materials from HPS. Between 1946 and 1947, HPS operations included decontamination activities on ships used during OPERATION CROSSROADS nuclear weapons tests. NRDL activities and projects included research into decontamination methods, personnel protection, development of radiation detection instrumentation, effects of radiation on living organisms and natural and synthetic materials, and experimentation in decontamination methodologies. The NRDL research projects ended in 1969, and the associated buildings were decontaminated and cleared for unrestricted reuse based on the standards in place at that time. The DON deactivated HPS operations in 1974 and the property remained largely unused until 1976. HPS was leased to Triple A Machine Shop, Inc., a private ship repair company, from 1976 to 1986 when its tenancy was terminated. The DON resumed its occupancy of HPS in 1987.

The present-day configuration of the storm drain and sanitary sewer system is the result of an evolutionary process. This system was originally designed and built in the 1940s as a combined system, using the same conveyance piping and 40 separate discharge outfalls into San Francisco Bay. This combined system grew in sections from the 1940s to its maximum size in 1958, when it underwent the first in a series of separation projects. The purpose of the separation projects was to provide for installation of dedicated sanitary sewer piping and pump stations that would discharge sanitary sewer effluent off-site to a publicly owned treatment plant operated by the City and County of San Francisco. The Building 819 sewage lift station was constructed specifically for conveyance of much of the sanitary sewage; however, stormwater flows from heavy rains would overwhelm the sewage lift station, and much of the sewage and stormwater would be diverted to various existing outfalls into the San Francisco Bay (DON 2008).

Separation of the storm drain and sanitary sewer systems involved installation of dedicated sanitary sewer collection piping or diversion structures within the combined system. A total of 28 San Francisco Bay outfalls were converted for exclusive use as stormwater outlets, while 12 continued to serve as combined outlets. In 1973, the second segregation project was undertaken including the removal of some of the stormwater outfalls from the South Basin area, just offshore from the Parcel E shoreline. The last of the separation projects was completed in 1976 and involved the installation of additional dedicated sanitary sewer piping. Complete separation of the combined systems was never achieved, and inspection of the systems has revealed that cross-connections may still exist. Due to the evolutionary nature of the separation process, radiological contamination from the same sources may have impacted piping and other components of both systems.

As a result of the historical radiological operations at HPS, some buildings, storm drain and sanitary sewer lines, soil, debris, and slag material have indicated the potential presence of low-level radioactive contamination. Hazardous materials also have been found at HPS. Pursuant to CERCLA and as amended by SARA, HPS was placed on the National Priorities List in 1989.

2.2 CONCEPTUAL SITE MODEL

Radioactive material consists of radionuclides that are unstable and undergo spontaneous transformations by releasing energy until a stable state is reached. This transformation process, or radioactive decay, is usually accompanied by the emission of charged particles (e.g., alpha and beta particles) or gamma rays. The radionuclides potentially present at HPS likely were the result of:

- Burial along with excavated fill materials while increasing the footprint of HPS
- Residue from decontamination of ships or workers
- Residual contamination as a result of NRDL experiments or tests in structures or land areas
- Residual contamination from shipyard operations
- Released into sanitary sewers and storm drains

The CSM is based on the supposition that radioactive materials likely were discharged from numerous locations throughout HPS into the storm drain and sanitary sewer system and may have been released into surrounding soils during the course of normal operations and maintenance or repair activities (DON 2008). Excavated manholes at HPS have been found to be constructed of concrete or brick and appeared to be porous, likely resulting in the transport of contamination into the surrounding soil. Piping at HPS was composed of:

- Concrete
- Vitreous clay pipe (VCP)
- Cast iron
- Steel
- Perforated metal
- Polyvinyl chloride (PVC) plastic
- Concrete-encased VCP

Typically, the pipe sections were connected by unsealed slip fittings at joints. Because the pipelines were not sealed, some leakage from the pipe was anticipated when the storm drain and sanitary sewer system was installed. Historical information indicates that the storm drain and sanitary sewers often were cleaned by power washing that may have forced radiological contamination out of the piping into the surrounding soils. The most recent power washing event was performed at HPS in 1999. Power washing of these old sewer systems may easily have caused further cracks or breaks in the piping and subsequent migration of contamination into the surrounding soil. The migration and extent of radiological soil contamination at HPS likely depended on how and where releases from the storm drain and sanitary sewer occurred.

The HPS storm drain and sanitary sewer removal actions performed throughout Parcels B, D-2, G, and UC1 and UC2 support the accuracy of the CSM. Similar types of fill materials were found in the excavated trenches and no waste materials have been discovered in the trenches. Identified radiological contamination has been found primarily in excavated soil. There has been little indication of historical spills or accidental releases based on historical research and radiologically impacted site investigations (DON 2008).

2.3 REMOVAL ACTION OBJECTIVES AND REMEDIATION GOALS

Based on the HPS radiological operational history described in the HRA (NAVSEA 2004) and site-specific investigative data, the DON determined that radioactive contamination in soils, debris, slag, buildings, and the storm drain and sanitary sewer system at HPS required a response action. This decision was documented in the final AM (DON 2006). The purpose of the AM was to document the DON's decision to perform time-critical removal actions at areas throughout HPS that may contain localized radioactive contamination and substantially eliminate identified exposure pathways to surrounding populations and nearby ecosystems.

The DON identified the applicable or relevant and appropriate requirements (ARARs) for the HPS removal actions, which are presented in Appendix A of the AM (DON 2006). Only those standards identified by the State of California in a timely manner that were more stringent than federal requirements became ARARs. The cleanup goals for localized radioactive contamination

at HPS presented in the AM are considered to be the most conservative available and were developed based on the ARARs. The release criteria identified in the AM are presented in Table 2-1. As identified in the HRA (NAVSEA 2004), cesium-137 (Cs-137), radium-226 (Ra-226), and strontium-90 (Sr-90) were listed as the radionuclides of concern (ROCs) for the storm drain and sanitary sewers.

The Parcel D-1 and Parcel UC1 ROD (DON 2009a) and the Parcel UC2 ROD (DON 2009b) were prepared to present the selected remedies to remediate soil, groundwater, and impacted structures. For this RACR, which is limited to Parcels UC1 and UC2, the final Parcel D-1 and Parcel UC1 ROD will be referred to as the UC1 ROD. The final Parcel UC1 and UC2 RODs were developed and the remedies selected in accordance with CERCLA as amended by SARA and, to the extent practicable, the NCP. The DON, EPA, DTSC, and the San Francisco Bay Regional Water Quality Control Board concurred with the selected remedies for Parcels UC1 and UC2.

The CERCLA remedial actions selected in the Parcel UC1 ROD (DON 2009a) and the Parcel UC2 ROD (DON 2009b) were necessary to protect the public health, welfare, and the environment from actual or potential releases of contaminants from these sites. Both RODs address radionuclides in soil and structures such as buildings and storm drain and sanitary sewers in addition to other contaminants. The discussions in this RACR are limited to radionuclide contamination in soil and structures and do not address other contaminants that may be present in Parcels UC1 and UC2.

RAOs for Parcels UC1 and UC2 were established based on attainment of regulatory requirements; standards and guidance; contaminated media; chemicals of concern; potential receptors and exposure scenarios; and human health and ecological risks. The success of the remedial actions ultimately is measured by their ability to meet the RAOs. As identified in each ROD (DON 2009a and 2009b), the radiological RAO for Parcels UC1 and UC2 was to prevent or minimize exposure to ROCs in concentrations that exceed remediation goals for all potentially complete exposure pathways.

2.3.1 Parcel UC1 Remediation Goals

Parcel UC1 includes radiologically surveyed and released Building 819, non-impacted Building 823, as well as storm drains and sanitary sewers and the associated soil. As indicated in the Parcel UC1 ROD (DON 2009a), the time-critical removal action to address potential radioactive contamination included:

- Surveying radiologically impacted structures
- Decontaminating and, if necessary, demolishing buildings

- Excavating radiologically impacted storm drain and sanitary sewer lines
- Screening, separating, and disposing of radioactively contaminated excavated materials at an off-site low-level radioactive waste (LLRW) facility

After each ROC was modeled for the proposed reuse of Parcel UC1, remediation goals were selected to ensure that the impact on human health and the environment achieved all regulatory requirements. Remediation goals were used to measure the success of the removal action and to achieve the RAO. The remediation goals for the Parcel UC1 ROCs were listed in Table 5 of the ROD (DON 2009a) and are presented in this RACR as Table 2-2.

2.3.2 Parcel UC2 Remediation Goals

Parcel UC2 includes the associated storm drains and sanitary sewers and the triangularly-shaped parking lot at the corner of Fisher Avenue and Robinson Street adjacent to Building 101. There are no buildings situated within Parcel UC2. As indicated in the Parcel UC2 ROD (DON 2009b), the time-critical removal action to address potential radioactive contamination included:

- Excavating radiologically impacted storm drain and sanitary sewer lines
- Screening, separating, and disposing of radioactively contaminated excavated materials at an off-site LLRW facility

The remediation goals were selected after each ROC was modeled for the proposed reuse of the property to ensure that the impact on human health and the environment met all regulatory requirements. Remediation goals were selected to achieve the RAO and were used to measure the success of the removal action. The remediation goals for the Parcel UC2 ROCs were listed in Table 4 of the ROD (DON 2009a) and are presented in this RACR as Table 2-3.

2.4 SUPPORTING DOCUMENTS SUMMARY

The following sections summarize the relevant supporting work plans and documents necessary to facilitate and complete radiological field activities associated with Parcels UC1 and UC2. Each of these supporting documents is incorporated by reference into this RACR. No regulatory approvals were required for the majority of these documents; however, applicable regulatory approvals or concurrences are provided in the appendices as specified in the sections below. In addition, no modifications to these work plans and documents were implemented during the Parcels UC1 and UC2 removal actions.

2.4.1 Design Plan Work Areas 15 and 26

The final Design Plan, Work Areas 15 and 26, Storm Drain and Sanitary Sewer Removal, Parcels C and D (Design Plan) (TtEC 2008c) was prepared for the DON and submitted to the regulatory agencies and other interested parties on May 29, 2008. Based on the requirements

specified in the final Project Work Plan, Revision 1 (TtEC 2007a), the Design Plan described the project-specific scope of work and the approach for removing the storm drains and sanitary sewer lines in Work Areas 15 and 26 that later became Parcels UC1 and UC2.

The Design Plan identified the extent of the storm drain and sanitary sewer system to be removed and provided information regarding pipe size, flow direction, material type, and length. The detailed design drawings were based on the most currently available 1995 engineering drawings provided by the DON. Existing topographic data were obtained from the HPS Base Map (44 sheets) dated November 1, 1993 (Gahagan and Brian 1993). Detailed design drawings, HPS construction specifications (TtEC 2007b), and descriptions of the fieldwork procedures and methods applicable to the storm drain and sanitary sewer removal actions were provided in the Design Plan.

2.4.2 Execution Plan

The final Execution Plan, Fisher and Spear Avenues, Sanitary Sewer and Storm Drain Removal (Execution Plan) (TtEC 2008e) was prepared and submitted to the DON on November 21, 2008. This document provided site-specific information not included in existing plans, including traffic control measures for diverting traffic while maintaining access for site tenants during construction, the engineered approach for excavations deeper than 20 feet below ground surface (bgs), and stormwater drainage systems integration and site restoration procedures. The Execution Plan was based on the requirements specified in the final Project Work Plan, Revision 1 (TtEC 2007a).

The general excavation approach described in the Execution Plan was to remove the overlying pavement, excavate the soil, remove the storm drain and sanitary sewer drain lines, and continue excavation to a minimum depth of 1 foot below the pipe. Open storm drain or sanitary sewer lines left in place during the removal process were to be plugged to prevent water from entering or exiting the pipes.

The Execution Plan also presented the approach for tie-in of surface drainage along Fisher and Spear Avenues to the existing storm drain systems. This included a system of drainage swales and curbs to direct overland stormwater runoff to active drain lines or swales. In addition, restoration activities included the compaction and repaving of Fisher and Spear Avenues.

2.4.3 Basewide Archaeological Monitoring and Discovery Plan

The final Basewide Archaeological Monitoring and Discovery Plan (TtEC 2009) was prepared to apply to those activities agreed upon between the DON and the California State Historic Preservation Office that will occur at HPS under the 1998 Base Realignment and Closure program. The document provided a context for the cultural resources of HPS and guidance for archaeological monitoring during removal and remedial actions. To comply with the substantive

requirements of Section 106 of the National Historic Preservation Act for removal and remedial actions undertaken at HPS, the DON directed the preparation of the plan and the monitoring of the fieldwork by a qualified archaeologist, as required, on a case-by-case basis. The document delineated those areas at HPS requiring monitoring during preconstruction activities or because of archaeological sensitivity. In addition, the document outlined procedures for identifying and treating resources discovered during invasive field activities and the treatment of human remains and grave-associated artifacts. The results of the archaeological monitoring activities are described in Section 3.8 of this RACR.

2.4.4 Base-wide Radiological Work Plan

The radiological work performed for Building 819 as well as other work control procedures were performed in accordance with the final Base-wide Radiological Work Plan, Revision 1 (Radiological Work Plan) (TtEC 2007d). This document provides guidance for:

- Radiological training
- Various work control procedures
- Radiological survey types and classifications
- Survey planning and implementation
- Results assessment
- Release criteria and investigation levels
- Field and laboratory instruments
- Decontamination and remediation
- Radioactive materials management
- Quality assurance and control

The procedures and methodologies outlined in the Radiological Work Plan (TtEC 2007d) are applicable to the work performed for Building 819 as well as other HPS-wide support functions.

2.4.5 Base-Wide Storm Drain and Sanitary Sewer Removal Work Plan

The Parcels UC1 and UC2 work activities were performed in accordance with the final Project Work Plan, Revision 3 (Work Plan) (TtEC 2008f). This Work Plan was a refinement of the Base-Wide Storm Drain and Sanitary Sewer Removal Work Plan (TtEC 2006a) and its subsequent revisions (TtEC 2007a, 2008b, and 2008f), collectively referred to throughout this RACR as the Work Plan (TtEC 2008f). The Work Plan presents the overall scope and approach for storm drain and sanitary sewer removal and radiological survey and release of the excavated trench areas at HPS.

The general approach to removing and radiologically surveying the storm drain and sanitary sewer lines described in the Work Plan (TtEC 2008f) was to:

- Excavate overburden soil and peripheral material
- Remove the pipelines
- Plug open sewer or storm drain lines left in place during the removal process to prevent water from entering or exiting pipes
- Conduct ex-situ radiological screening and sampling
- Perform FSS activities on excavated soil and exposed excavation trench surfaces

Following an evaluation of the results of these activities and the removal of any identified radiological contamination, the trench excavations were backfilled and the site restored.

The Work Plan (TtEC 2008f) provides the procedures and methodologies for performing the Parcels UC1 and UC2 and HPS-wide storm drain and sanitary removal actions including:

- Radiological Control Plan
- FSSs
- Field Implementation
- Waste Management Plan
- Environmental Protection Plan
- Sampling and Analysis Plan (SAP)
- Project Quality Control Plan
- Stormwater Pollution Prevention Plan

In accordance with the Work Plan (TtEC 2008f), most storm drain and sanitary sewer piping within each parcel or area were to be removed, although some piping may be left in place to be addressed at a later date and limited piping may be left in place permanently. Specifically, piping laterals originating at non-radiologically impacted buildings would only be removed within the first 10 feet of their union with a main trunk line. If radiological contamination was not present in this segment of the line, the exposed ends of the lateral were capped or plugged and the remaining portions left in place. If evidence of radiological contamination was encountered, the remaining lateral was removed to the extent practicable. In addition, piping located within 10 feet of a building (referred to in this RACR as the 10-foot buffer zone) or other obstructions was left in place to protect the integrity of the structure and to ensure the health and safety of workers and tenants.

2.4.6 Final Survey Unit Project Reports Abstract

The final Survey Unit Project Reports Abstract (SUPRA) (TtEC 2010) was prepared to document work performed under the Work Plan (TtEC 2008f). Because there are numerous trench survey units at HPS and each trench survey unit has its own documentation, an overarching abstract was developed to provide information and details common to each of the individual trench survey units and to reduce the detail that typically would be redundant to each report. The SUPRA has been revised as state-of-the-art laboratory methodologies and quality assurance procedures are refined. This document is applicable to all HPS storm drain and sanitary sewer reports and data sets prepared for regulatory review. The SUPRA referenced in this RACR is provided in Appendix A.

The SUPRA provides a history of the storm drain and sanitary sewer system at HPS and documentation of the site's operational history. The SUPRA also presents discussions and common information related to storm drain and sanitary sewer system removal actions at HPS including:

- Release limits
- As low as reasonably achievable (ALARA) process
- ROCs and the associated release criteria
- Investigation levels
- FSS objectives, design, and methodology
- Import fill material sources, screening, and results
- Reference areas
- Sample collection methodologies and laboratory analyses
- Quality assurance, quality control, and comparative laboratory sample results
- Uncertainty analysis
- Data assessment (verification, validation, and evaluation)
- Statistical tests
- Dose and risk modeling
- Recommendation of final unrestricted release criteria

The release criteria for storm drain and sanitary sewer soil, as presented in the SUPRA, are provided in Table 2-4 and include the residual dose for both outdoor workers and residents. California Department of Public Health, Environmental Management Branch (CDPH) acceptance of the SUPRA and its contents was achieved on January 14, 2010, following numerous discussions and document revisions (CDPH 2010). However, CDPH specifically

withheld recognition "...that data from the onsite laboratory meets CDPH needs for concurrence on future unrestricted release." A copy of the SUPRA regulatory concurrence is provided in Appendix A.

2.4.7 Survey Unit Project Reports

The radiological details of the storm drain and sanitary sewer removal work completed for Parcels UC1 and UC2 are provided in the final versions of the Survey Unit Project Reports (SUPRs) for Survey Unit 133, Survey Units 136 through 150, and Survey Units 164, 167, 168, and 171. The objective of the SUPRs was to demonstrate that identified residual radioactivity levels inside the excavated trench and within the excavated soils and/or imported fill used as backfill material met the release criteria. Details of the fieldwork and construction activities performed are provided in this RACR and were only briefly summarized in each SUPR.

The individual SUPRs prepared for the storm drain and sanitary sewers associated with Parcels UC1 and UC2 present the radiological details and summarize the scope, approach, and survey results from the removal actions. Each SUPR presents discussions and information related to the removal actions including:

- FSS activities performed for the trench survey unit and selected backfill materials
- Laboratory analytical results and comparison of on-site and off-site analytical results
- Dose modeling with input parameters using the larger of the method detection limit or reported activity
- Dose and risk modeling results
- Derived concentration guidelines, levels, and modeling
- ALARA and the environmental ALARA process, including identification and review of potential radiological impacts as well as discussions related to qualitative and quantitative ALARA analyses
- Recommendation for final unrestricted release

A copy of each SUPR associated with Parcel UC1 is provided in Appendix E and copies of those SUPRs associated with Parcel UC2 are presented in Appendix F.

2.4.8 U.S. Environmental Protection Agency Acceptance of On-Site Laboratory Results

The EPA is the lead regulatory agency for the time-critical removal actions performed at HPS. To expedite and focus remediation efforts, a state-of-the-art on-site laboratory for radiological analysis was established at HPS under contract to TtEC. At a meeting regarding radiological cleanup of HPS in October 2009, the CDPH requested that the EPA submit a letter explaining

their reasons for accepting the DON's on-site laboratory results to verify the completion of the radiological soil removal actions.

On December 15, 2009, the EPA provided the CDPH with an explanation as to why the DON's methods provided sufficient data quality to allow risk-based determinations that the results of the removal activities were protective of human health and the environment. The EPA performed an inspection and documented that the procedures, conduct, and operational performance of the on-site laboratory were exemplary and that every reasonable step was being taken to show that the site-specific remediation goal was being met. A copy of the EPA letter to CDPH is provided in Appendix J.

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3.0 STORM DRAIN AND SANITARY SEWER REMOVAL OVERVIEW

This section provides an overview of the storm drain and sanitary sewer system removal actions completed for Parcels UC1 and UC2. The purpose of these removal actions was to meet the currently specified removal action objectives and achieve the unrestricted radiological release of the Parcels UC1 and UC2 storm drain and sanitary sewer system. The removal action objectives were developed to protect public health and welfare, and the environment from actual or potential exposure to future residents or workers by physically removing the existing storm drain and sanitary sewer lines and disposing of the associated radioactive contaminants that exceed the radiological remediation goals. Meeting the removal action objectives substantially eliminates the potential migration of contaminated material within or outside these systems at HPS.

The Parcels UC1 and UC2 removal actions were performed under TtEC's United States Nuclear Regulatory Commission (NRC) Service Provider Radioactive Material License. In accordance with NCP requirements, the ARARs for these removal actions are presented in the AM (DON 2006) and each ROD (DON 2009a and 2009b). The radiological release criteria for HPS, as identified in the AM, are provided in Table 2-1 and the release criteria for the storm drain and sanitary sewer removal actions, as presented in the SUPRA (Appendix A), are provided in Table 2-4. In addition, the Parcel UC1 and Parcel UC2 remediation goals are presented in Tables 2-2 and 2-3, respectively.

Fieldwork for the Parcels UC1 and UC2 storm drain and sanitary sewer removal actions was initiated on March 10, 2009 and continued through July 10, 2010. A total of 20 survey units were delineated for Parcels UC1 and UC2 with 11 survey units located in Parcel UC1 (Survey Units 133, 139, 140, 146, 147, 148, 150, 164, 167, 168, and 171) and 9 survey units located in Parcel UC2 (Survey Units 136, 137, 138, 141, 142, 143, 144, 145, and 149). Because Survey Units 143, 149, and 150 crossed the Parcel UC1 and UC2 property boundary, Survey Unit 150 was included with Parcel UC1 and Survey Units 143 and 149 were included with Parcel UC2 for the purpose of the following discussions because these are where the main body of each of these survey units is located. Table 3-1 summarizes the radiological activities performed for each trench survey unit to support the recommended unrestricted radiological release of Parcels UC1 and UC2 and includes pertinent data related to contamination, remediation, and dose modeling.

There were 31 storm drain lines and 43 sanitary sewer lines associated with Parcel UC1, and 11 storm drain lines and 14 sanitary sewer lines associated with Parcel UC2. In total, 6,407 linear feet of trench (inclusive of excavated soil and pipe/manholes) was excavated during the removal actions with 547 linear feet resulting from pipe identified in the field that was not in the original Design Plan (TtEC 2008c). Figures 3-1 and 3-2 present the individual storm drain and sanitary sewer lines associated with Parcel UC1 and Parcel UC2, respectively.

The sanitary sewer piping in Parcel UC1 primarily consisted of concrete, VCP, or cast iron located at depths between 1 foot and 18 feet bgs with 6-inch to 33-inch diameters. The Parcel UC1 storm drain lines primarily consisted of concrete, VCP, cast iron, or corrugated metal located at depths between 1 foot and 11 feet bgs with 4-inch to 24-inch diameters. The maximum depths of the excavated trenches ranged between 2 feet and 20 feet bgs. The total area of the exposed trench surface in Parcel UC1 was 8,004 square meters (m²) with 3,509 linear feet of trench. Table 3-2 identifies each survey unit and its associated parcel, storm drain and sanitary sewer trench segment, type of trench segment (storm or sanitary), pipe composition, and minimum and maximum depths of both pipe and trench.

As indicated in Table 3-2, Parcel UC2 sanitary sewer piping consisted of concrete lines located at depths between 13 and 20 feet bgs with 12-inch to 24-inch diameters. The Parcel UC2 storm drain lines primarily consisted of concrete and VCP located at depths between 1 foot and 14.5 feet bgs with 4-inch to 18-inch diameters. The maximum depths of the excavated trenches on Parcel UC2 ranged between 2 feet and 21 feet bgs in Parcel UC2. The total area of the exposed trench surface in Parcel UC2 was 5,857 m² with 2,632 linear feet of trench.

3.1 PRE-EXCAVATION FIELD ACTIVITIES

Pre-excavation field activities for the Parcels UC1 and UC2 removal actions were initiated on March 10, 2009. Temporary fencing was installed or reconfigured around work areas to incorporate Parcels UC1 and UC2 into the radiological control area (RCA) associated with Parcel G and RSY2. Incorporating the Parcels UC1 and UC2 work areas with RSY2 created a single RCA that eliminated the need to continuously radiologically screen workers, vehicles, and equipment transferring excavated soil from the work areas to RSY2 for processing.

Fisher and Spear Avenues were blocked and the Crisp Road entrance/exit gate was reopened. A temporary shack with a generator and light-stand was installed at the Crisp Road gate for use by the HPS security guards during construction. The temporary reopening of the Crisp Road gate ensured uninterrupted access to HPS for the San Francisco Police Department, University of California San Francisco, and other tenants. Traffic was rerouted around Parcels UC1 and UC2 in accordance with the approved traffic plan prior to beginning asphalt removal.

During the pre-excavation activities, railroad track lines near the Fisher and Spear Avenues intersection were removed and radiologically scanned prior to being transferred for recycling or disposal as non-impacted waste. Geophysical surveys also were performed and the storm drain and sanitary sewer lines were marked out.

Asphalt removal activities were initiated along Spear Avenue on March 20, 2010. These activities included removal of the surface asphalt along both Fisher and Spear Avenues and staging the material pending its reuse as road base during site restoration activities.

Historical figures indicate that Parcels UC1 and UC2 were located within the 1939 shoreline and were not part of the fill areas that comprise the majority of the HPS site. Because TtEC anticipated that the subsurface soil formations primarily would be serpentine rock, additional dust mitigation measures were installed to reduce potential asbestos exposure to workers and the community. These mitigation measures included a dust repression misting system, continuous spraying by water trucks to minimize fugitive dust, applying fabric to temporary fences to reduce windblown particulates, and applying a surfactant to open trenches. Wind socks were installed to determine the prevailing wind direction and ensure proper placement of the radiological air monitoring equipment on a daily basis. Air monitors were installed upwind and downwind of the excavation activities to measure airborne asbestos, particulates, lead, and magnesium. No exceedances were identified during the field activities.

As part of the pre-excavation activities, the DON directed TtEC to remove the standing gray waters from the Parcels UC1 and UC2 sanitary sewer lines. These sanitary sewer lines received wastes discharged from the SFRA property and subsequently were isolated to prevent illicit discharges to the City of San Francisco's sewer system or to San Francisco Bay. Following isolation, the residual material in the sanitary sewer lines was pumped through the Crisp Road sanitary sewer force main under a batch permit to the City of San Francisco's sewer system.

Storm drain and sanitary sewer excavation activities commenced on March 20, 2009 in Parcel UC1 and were completed on July 10, 2010. Excavation activities in Parcel UC2 were completed on November 3, 2009.

3.2 EXCAVATED SOIL PROCESSING

Soil derived from the excavation of the Parcels UC1 and UC2 storm drain and sanitary sewer systems was transported to RSY2 and placed on designated screening pads for dewatering and radiological processing. Table 3-3 lists each truckload of soil excavated, the assigned screening pad and stockpile number, and the excavation date. During processing, the excavated material was spread on screening pads in lifts that did not exceed a thickness of 6 inches or 1,000 m² in area. Radiological surface surveys were performed and consisted of a high-density gamma scan performed with the use of gamma scintillation detectors and supported by global positioning equipment. A discussion of the various towed array systems used for the scanning activities is provided in the Work Plan (TtEC 2008f) and the SUPRA (Appendix A). This survey process resulted in a 100 percent surface scan. Radioactive material identified during the screening activities were collected, segregated, and stored in appropriate containers for subsequent disposal by the DON's radiological waste contractor. Gamma scan data for the excavated soil processed in RSY2 and used as backfill material are presented in the individual SUPRs included in Appendices E and F.

Areas of excavated soil placed on the screening pads in RSY2 that showed the potential presence of radiation levels greater than the established investigation limits were further evaluated, and biased soil samples were collected, as appropriate. The systematic sample collection locations were identified based on a random start point using the most current version of Visual Sample Plan (VSP) software. A minimum of 18 systematic soil samples were collected from each screening pad and analyzed by the on-site laboratory using gamma spectroscopy. Any soil sample results exceeding a radionuclide-specific release criterion was remediated. The release criteria for the storm drain and sanitary sewer removal actions are provided in Table 2-4. Remedial action support surveys were performed until postremediation sample results were less than the radionuclide-specific release criteria. The results of the analyses were provided to the RASO for review. Following an evaluation of the laboratory analytical results for the 18 FSS samples and with the concurrence of the RASO, the soil on the screening pads was stockpiled pending the results of the off-site Sr-90 analysis. Once the off-site laboratory analytical results were evaluated and the data provided to the RASO for review, the RASO concurred on whether or not the excavated soil stockpile was acceptable for use as backfill material. Only those stockpiles that received concurrence from the RASO were used as backfill material in the trench survey units.

Approximately of 20,680 cubic yards of soil were generated during the excavation of the Parcels UC1 and UC2 storm drain and sanitary sewers and placed on individual screening pads for radiological processing in RSY2. Each truckload of excavated soil was assigned to an appropriate screening pad, and each screening pad was assigned a unique identification number for tracking purposes. These unique identification numbers were sequential and designated as “ES” for the excavated soil units.

During the Parcels UC1 and UC2 removal actions, a total of 2,631 soil samples were collected from the soil derived from the excavation of the storm drain and sanitary sewers and placed on screening pads in RSY2 for radiological processing. About 876 cubic yards of radiologically processed soil exceeded the release criteria and was remediated. The remediated soil was placed in LLRW bins for disposal. The radiologically contaminated soil was shipped off-site to either the U.S. Ecology facility in Idaho or the Energy Solutions facility in Clive, Utah by the DON’s radiological waste contractor. Radionuclide concentrations above the release criteria in the storm drain and sanitary sewer soil excavated from Parcels UC1 and UC2 and processed in RSY2 included Cs-137 ranging from 0.11532 picocuries per gram (pCi/g) to 0.16916 pCi/g, and Ra-226 ranging from 1.4909 pCi/g to 3.2976 pCi/g.

The majority of the stockpiles derived from Parcels UC1 and UC2 soils were backfilled into appropriate trench survey units. One stockpile derived from soil excavated from the IR-36 area and several other stockpiles that were not acceptable for use as backfill were staged pending off-site disposal by the DON’s non-radiological waste contractor. A total of 11 radiologically

processed and released soil stockpiles excavated from non-IR Program site areas of Parcels UC1 and UC2 were used as grading material on HPS. The DON's non-radiological waste contractor transported a total of seven radiologically processed and released soil stockpiles off-site because they were either excavated from IR Program Site IR-36 or were observed to have staining and/or odor that indicated the potential presence of chemical contamination. One radiologically processed and released soil stockpile remains on HPS pending future use as grading material. Table 3-4 shows each of the stockpiles that incorporate soil excavated from Parcels UC1 and UC2 storm drains and sanitary sewers as well as pertinent information related to the radiological processing of each stockpile in RSY2, contamination identified, soil remediated for disposal as LLRW, and disposition of the soil.

3.3 TRENCH SURVEY UNIT AND PIPING SAMPLING ACTIVITIES

At the completion of excavation, numerous soil samples were collected from the trench survey units to determine whether radionuclide contamination remained in place above the release criteria in accordance with the Work Plan (TtEC 2008f). These samples were submitted to the on-site laboratory for analysis by gamma spectroscopy with 10 percent sent to the off-site laboratory for Sr-90 analysis and quality assurance verification. During the Parcels UC1 and UC2 storm drain and sanitary sewer removal actions, a total of 798 soil samples were collected from the 20 Parcels UC1 and UC2 trench survey units and analyzed by the on-site laboratory. Of these 798 samples, 438 were investigative and 360 were systematic FSS soil samples. As indicated in Table 3-1, the Cs-137 concentrations that exceeded the release limit ranged from 0.11564 pCi/g to 0.19605 pCi/g, and the Ra-226 concentrations that exceeded the release limit ranged from 1.5045 pCi/g to 3.3780 pCi/g. The storm drain and sanitary sewer release criteria are provided as Table 2-4.

Sediment samples were collected from piping (pipe and manholes) during the excavation activities when a sufficient quantity was available for analysis by the on-site laboratory. A total of 55 sediment samples were collected from pipes and 10 sediment samples were collected from manholes for analysis by gamma spectroscopy. Nine manhole sediment samples and 26 pipe sediment samples did not indicate the presence of radioactivity above the release criteria for any ROC. In those sediment samples that displayed radioactivity above the release criteria, Cs-137 concentrations ranged from 0.11595 pCi/g to 0.34159 pCi/g and Ra-226 concentrations ranged from 1.6422 pCi/g to 2.3489 pCi/g. Table 3-5 summarizes the contaminated sediment sample analytical results for piping excavated from Parcels UC1 and UC2. Copies of the sediment sample analytical reports are provided in Appendix C.

Swipe samples were collected from residual pipes that could not be removed from Parcels UC1 and UC2 due to the presence of structural or overhead obstructions such as active utility lines. The purpose of the swipe samples was to assess the presence of alpha and beta/gamma contamination readily removable from the surface. The swipe samples were processed in the on-

site laboratory using a Protean IPC 9025 gas-flow proportional alpha and beta/gamma radiation counter, which features a low-background counting chamber. Data are reported in units of disintegrations per minute (dpm) per 100 square centimeters (cm²). Swipe samples collected from pipes in Parcels UC1 and UC2 will be discussed in Sections 5.7.2 and 5.8.2 of this RACR, as appropriate. Table 3-6 lists each of the piping segments left in place. Copies of the swipe sample reports are provided in Appendix G.

3.4 EXCAVATED TRENCH AND PIPING REMEDIATION

During the removal action activities, approximately 262 cubic yards of contaminated soil was remediated from the excavated trenches in Parcels UC1 and UC2 based on the laboratory analytical results. The remediated soil was placed in LLRW bins for disposal. The majority of the contaminated soil remediated was excavated from Survey Unit 136 in Parcel UC2 (about 203 cubic yards). Table 3-7 lists each trench survey unit and associated trench segments, date remediated, estimated volume of soil remediated, and the LLRW bin or bins in which the contaminated material was placed prior to transfer to the DON's radiological waste contractor. The radiologically contaminated soil was shipped off-site to either the U.S. Ecology facility in Idaho or the Energy Solutions facility in Clive, Utah.

As detailed in the Work Plan (TtEC 2008f), most storm drain and sanitary sewer piping within each parcel was to be removed, although some piping may be left in place to be addressed at a later date and limited piping may be left in place permanently (Table 3-6). Specifically, piping laterals originating at non-radiologically impacted buildings would only be removed within the first 10 feet of their union with a main trunk line. If radiological contamination was not present in this segment of the line, then the exposed ends of the lateral would be capped or plugged and the remaining portions left in place. If evidence of radiological contamination was encountered, the remainder of the lateral was removed.

While the majority of the pipe excavated from Parcels UC1 and UC2 disintegrated upon removal and was transferred along with the excavated soil (ES) for processing in RSY2, the remaining excavated pipe was placed in LLRW bins for disposal along with 35 excavated manholes. With the concurrence of the DON, radiological survey activities were not performed on pipe sections or manholes excavated from Parcels UC1 or UC2 due to the limited quantity removed and to expedite fieldwork activities. Table 3-8 identifies each piping component excavated from Parcels UC1 and UC2 and placed in LLRW bins for disposal. The Parcels UC1 and UC2 piping was shipped off-site to either the U.S. Ecology facility in Idaho or the Energy Solutions facility in Clive, Utah by the DON's radiological waste contractor.

3.5 EXCAVATED TRENCH FINAL STATUS SURVEY ACTIVITIES

The Work Plan (TtEC 2008f) specifies the work to be performed for the storm drain and sanitary sewer FSS activities. The Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) (DoD et al. 2000), the Nonparametric Statistical Methodology for the Design and Analysis of the Final Status Decommissioning Survey Guide (NUREG-1505; NRC 1998), and the Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions Guide (NRC 1997) were used as guidance in designing the FSSs. In general, FSSs for every excavated trench section included a 100 percent surface scan and systematic and biased direct measurements, as appropriate. Direct surface radiation measurements were collected at each systematic sample location prior to the collection of the soil sample to identify the potential presence of gross contamination. None of the direct measurements collected during the FSS activities indicated the presence of radiological contamination.

Systematic soil samples were collected from each trench survey unit after establishing a grid that did not exceed 1,000 m² over the exposed trench surface. The systematic soil sample locations were identified based on a random start point and using VSP software. A minimum of 18 discrete soil samples were collected from each trench survey unit and submitted to the on-site laboratory for analysis by gamma spectroscopy. In addition, 10 percent of the samples were sent to the off-site laboratory for Sr-90 analysis and an additional 10 percent of the samples for quality assurance verification. The FSS results were used for dose and risk modeling to facilitate regulatory agency concurrence for unrestricted release.

3.6 DOSE AND RISK MODELING AND THE ALARA PROCESS

Survey units for FSS activities consisted of two different types: 1) trench units and 2) ES units and/or import fill material. Dose and risk modeling was performed for each of the 20 trench survey units using the default residential farmer scenario provided in the most current version of RESRAD at the time of the modeling exercise. The backfill material and the trench units were modeled separately with input parameters using the larger of the method detection limit (MDL) or reported activity concentrations. Radionuclide-specific release criteria were obtained from the AM (DON 2006) and were then modeled using RESRAD Version 6.3, based on the 25 millirems per year (mrem/y) total effective dose equivalent or were otherwise risk-based; the final doses using the risk-based release criterion for HPS were all less than this 25 mrem/y release criterion.

The results of the modeling efforts for the 20 trench survey units in Parcels UC1 and UC2 met the EPA risk criterion of less than 3×10^{-4} , which supports free release. Based on the dose and risk modeling results, the highest net dose to workers or members of the public as a result of exposures to residual radioactive material in soil on Parcel UC1 was identified in Survey Unit 171 at 5.702 mrem/y with an excess lifetime cancer risk of 9.317×10^{-5} , and on Parcel UC2 in

Survey Unit 142 at 5.896 mrem/y with an excess lifetime cancer risk of 9.278×10^{-5} . Modeling is discussed separately for each trench survey unit in this RACR and a complete discussion of the dose and risk modeling results was presented in each SUPR provided in Appendix E for Parcel UC1 and Appendix F for Parcel UC2. Table 2-4 presents the storm drain and sanitary sewer removal action release criteria for each ROC for soil including the residual doses for both outdoor workers and residents. A summary of the dose and risk modeling results for each trench survey unit is provided in Table 3-1.

The environmental ALARA process was implemented for each of the 20 survey units as described in the SUPRA (Appendix A) in addition to the dose and risk modeling efforts. The ALARA process was discussed in the individual SUPRs provided in Appendices E and F. ALARA analyses were performed based on recent estimates of dose to the public from HPS operations. Based on qualitative ALARA analyses, excavation projects that could cause the potential dose to the public to exceed 1 millirem (individual) or 10 person-rem (collective) are subjected to quantitative ALARA analyses. To date, no operations at HPS have resulted in an individual dose to the public greater than 1 mrem or a collective dose greater than 10 person-rem. Qualitative ALARA analyses did not result in any gamma measurements above the investigation levels, and none of the sample results identified activity above the release criteria for any ROC. In addition, air sampling results were not above 10 percent of the derived air concentration and the processed personnel dosimetry badges did not identify a gamma dose above background levels. A complete discussion of the ALARA process for each Parcel UC1 and UC2 trench survey unit was provided in each SUPR (Appendices E and F).

3.7 IMPORTED FILL

The storm drain and sanitary sewer removal actions necessitated the importation of appropriate soil for use as backfill material: 1) when insufficient radiologically released excavated soil was available for these activities and 2) to account for the void created by the removed piping. The DON directed the development of the HPS Project Backfill Review and Acceptance Procedure HPO-Tt-0270 (TtEC 2006b) to identify the procedural requirements necessary to ensure that imported fill materials were adequately reviewed and accepted prior to being brought to HPS. In addition, soil being screened for potential backfill material was sampled in accordance with specific instructions identified in the SAP, Appendix A of the Work Plan (TtEC 2008f).

Imported fill was used as backfill in the majority of the Parcels UC1 and UC2 trench survey units as a supplement to the radiologically processed and free released excavated soil. Only Survey Units 143 and 144 were backfilled using radiologically free released excavated soil without the addition of imported fill. A complete discussion of the imported fill was provided in the SUPRA (Appendix A) including soil analytical test results and acceptance criteria. Only the material identified as “Mills Peninsula Hospital” soil in the SUPRA was used as imported fill in Parcels

UC1 and UC2. Table 3-1 identifies the backfill material, including the imported fill, placed in each trench survey unit.

3.8 ARCHAEOLOGICAL MONITORING

Archaeological monitoring for the Parcels UC1 and UC2 storm drain and sanitary sewer removal actions was performed in accordance with the final Basewide Archaeological Monitoring and Discovery Plan (TtEC 2009). Monitoring activities were conducted from March through July 2009 by a qualified archaeologist and archaeological technicians. The archaeological monitors inspected ground surfaces within the archaeologically sensitive areas following the removal of the paved surfaces and during excavation activities. These areas were inspected for signs of cultural materials, previous disturbance, fill, and bedrock and native soil exposures. Excavated material transferred to RSY2 for processing was surveyed weekly on the screening pads to identify any cultural materials that were missed during the excavation activities. Daily cultural resource monitoring data sheets were filed with and reviewed by the Lead Archaeologist. No cultural materials were observed during the archaeological monitoring activities, and no cultural resources were encountered or disturbed during construction. The final Archaeological Monitoring Summary Report is provided in Appendix D.

3.9 IR PROGRAM SITES

Chemical contamination at HPS is addressed through the IR Program process and is consistent with CERCLA as amended by SARA, and the NCP, to the extent practicable. Pursuant to Executive Order 12580, the DON is the lead agency responsible for implementation of the IR Program. The EPA, California Environmental Protection Agency, DTSC, Regional Water Quality Control Board, RASO, and United States Fish and Wildlife Service (for sensitive species) provide regulatory oversight and guidance for removal actions associated with the storm drain and sanitary sewer system removal. Table A-3 of the SAP provided in Appendix A of the Work Plan (TtEC 2008f) identified each of the IR Program sites located at HPS and their associated chemicals of concern.

IR Program Site IR-36 is located at the west end of Parcel UC1 and is the only IR Program site associated with trench excavations. Although IR-06 is located on portions of Parcel UC2 at Robinson Street, no storm drain or sanitary sewer lines were excavated in this area. Throughout the excavation process, soil and piping was visually inspected for staining or odors regardless of whether it was excavated from an IR Program site. Material that emitted odors or was stained and material excavated from IR-36 were segregated for further sampling and analysis in accordance with the Work Plan and SAP (TtEC 2008f). The release criteria for the IR Program sites were presented in the Final ROD for Parcels D-1 and UC1 (DON 2009a).

IR-36 is a designated area at HPS located at the juncture of Parcels UC1, E, and G. A portion of the sanitary sewer line excavated at the western end of Parcel UC1 was located within IR-36. As identified in the Work Plan and SAP (TtEC 2008f), the chemicals of concern associated with IR-36 include:

- Volatile organic compounds
- Semivolatile organic compounds
- Pesticides
- Polycyclic aromatic hydrocarbons
- Polychlorinated biphenyls
- Total oil and grease
- Total petroleum hydrocarbons as diesel, gasoline, and motor oil
- Heavy metals

Samples of soil excavated from IR-36 during the removal action were collected and sent to the off-site laboratory for chemical analysis to verify whether the excavated material met the remediation criteria in accordance with the approved Work Plan (TtEC 2008f) and the Parcel D-1 and UC1 ROD (DON 2009a). Based on the analytical results, soils excavated from IR-36 exceeded the action level for arsenic. A copy of the IR-36 chemical laboratory analytical results is provided in Appendix B. Following radiological processing and release activities, any soils excavated from IR-36 were disposed of off-site by the DON's non-radiological waste contractor along with any other non-IR Program soil that exhibited odors or staining.

4.0 PARCEL UC1 REMOVAL ACTION

The trench survey units located in Parcel UC1 include Trench Survey Units 133, 139, 140, 146, 147, 148, 150, 164, 167, 168, and 171 (Figure 4-1). The SUPRs for each of the Parcel UC1 trench survey units are provided in Appendix E. Buildings 819 and 823 are located with the Parcel UC1 property boundaries. The FSS for Building 819 is discussed in Section 6.0 of this RACR. The presence of either radioactive material or waste has never been associated with Building 823, and this structure will only be discussed in this RACR as it pertains to Building 819 and the related sanitary sewer removal activities. The following sections summarize the activities performed to support the recommended radiological release for unrestricted use of Parcel UC1.

4.1 TRENCH SURVEY UNIT 133

Trench Survey Unit 133 (SU133) is located at the west end of Parcel UC1 and to the west, south, and east of Buildings 819 and 823 (Figure 4-1). Building 819 was the former sewage lift station and is discussed in Section 6.0. SU133 connects to Survey Unit 146 on the east, Survey Unit 124 (associated with Parcel G) on the south, and Survey Unit 167 on the west, and consists of six sanitary sewer trench segments identified as 02-D26-00-2G, -2H, -3F, -5B, -6I, and -8B (Figure 4-1). A shallow connector trench was excavated between trench segments 02-D26-00-6I and 02-D26-00-2H to join these two sections into one survey unit. This connector trench is located to the west of Building 823 and runs south from trench segment 02-D26-00-6I toward Spear Avenue.

The majority of the trench wall in SU133 was vertical due to the presence of a subsurface rock formation (Photograph 4-1). Following the completion of the excavation, SU133 displayed a total exposed surface area of 806 m² and was about 344 linear feet in length. The depth of the trench survey unit ranged from 5 feet to 17 feet bgs as shown in Table 3-2. Groundwater was encountered at a depth of approximately 10 feet bgs.

4.1.1 SU133 Removal Action Activities

SU133 excavation activities commenced on March 26, 2009 with trench segments 02-D26-00-2H and -6I, as identified in the Design Plan (TtEC 2008c). A total of 134 truckloads (about 944 cubic yards) of soil were excavated from SU133 and transferred to RSY2 for processing (Table 3-3). During the excavation of trench segment 02-D26-00-2H, a previously unidentified sanitary sewer line was found and designated as 02-D26-00-8B (Figure 4-1). Only 28 linear feet of this pipe segment was identified extending toward the east where it terminated at Manhole MH278. Although identified in the Design Plan, only 10 linear feet of trench segment 02-D26-00-6I was found during excavation activities. The remainder of the pipe likely was removed

during the sanitary sewer force main bypass activities performed by the DON in September 2006 (Photograph 4-2). Excavation of SU133 was completed on April 8, 2009.

Approximately 304 linear feet of pipe was removed from SU133 during excavation activities. Trench segments 02-D26-00-2G, -2H, and -3F contained concrete pipe ranging from 24-inch-diameter to 33-inch-diameter. Trench segments -5B and -8B were 6-inch-diameter VCP and line -6I was 24-inch-diameter VCP. SU133 pipe was found in the trench between 4.5 feet and 16.5 feet bgs (Table 3-2). The majority of the pipe disintegrated upon removal and was transferred along with the excavated soil to RSY2 for processing. The remainder of the pipe was placed in LLRW bins for disposal by the DON's radiological waste contractor (Table 3-8).

As discussed in the SU133 SUPR provided in Appendix E, sufficient sediment was found in excavated piping for sample collection and analysis. No activity was identified above the release criteria in three of the sediment samples. Results from some of the sediment samples identified Cs-137 and Ra-226 above the release criteria (Table 3-5). A copy of the sediment sample analytical results is provided in Appendix C.

Three manholes associated with SU133 were identified on the Design Plan (TtEC 2008c): MH278, MH279, and MH280. Manhole MH278 was excavated on April 1, 2009 and was placed in an LLRW bin for disposal (Table 3-8). Insufficient sediment was found in MH278 to submit to the on-site laboratory for analysis. Although Manholes MH279 and MH280 were identified on historical drawings, they were not found during the excavation activities for SU133 and likely were removed during the DON's sanitary sewer force main bypass activities.

Initially, 18 soil samples were collected from SU133 on May 21, 2009 and submitted to the on-site laboratory for analysis. One soil sample, identified as 02-UCT-133-11, showed Ra-226 activity above the release limit at 1.7211 pCi/g. Figure 4-2 depicts the location of the contaminated soil sample in SU133. Based on this analytical result, approximately 4 cubic yards of soil was remediated (Table 3-7). The remediated soil was placed in LLRW bin GFLU001149G11 for disposal on June 1, 2009. Three postremediation samples subsequently were collected and analyzed by the on-site laboratory with no radioactivity identified above the release criteria. In total, 21 investigation samples were collected from SU133 and analyzed by the on-site laboratory. Table 3-1 summarizes the relevant information for each survey unit including contamination levels identified and remediation activities completed. Table 3-7 lists the soil remediated from SU133 by trench segment and provides the disposal date as well as the associated LLRW bin. The on-site and off-site laboratory analytical reports for each SU133 soil sample are presented in Attachment 2, and the off-site laboratory quality assurance data are included in Attachment 6 of the SU133 SUPR provided in Appendix E.

4.1.2 SU133 Piping Remaining in Place

Excavation activities for trench segment 02-D26-00-2G were halted at the 1.5-foot-thick concrete pad associated with the Building 819 exterior sump to avoid impacting the integrity of the structure (Figure 4-1). A total of 53 linear feet of this 33-inch-diameter concrete trench segment was removed during the excavation activities, as indicated in Table 3-6. Based on the Design Plan (TtEC 2008c), an estimated 9 linear feet of trench segment 02-D26-00-2G continues beneath the concrete pad.

Sufficient sediment was available in only one pipe removed from trench segment 02-D26-00-2G. The sediment sample was collected on March 31, 2009 and submitted to the on-site laboratory for analysis. No radioactivity above the release criteria was identified in this sediment sample. A copy of the sediment sample analytical results is provided in Appendix C.

No evidence of residual radioactivity was found to be present in Building 819 based on the results of the FSS survey activities and sample results (TtEC 2007c). The FSS for Building 819 is summarized in Section 6.0. A copy of the regulatory concurrence for unrestricted release of Building 819 is provided in Appendix H.

Based on the analytical results for the sediment sample collected from trench segment 02-D26-00-2G as well as the unrestricted, free release of Building 819, the DON concluded that the remaining 9 linear feet of sanitary sewer pipe continuing beneath the concrete pad following the removal action was not radiologically impacted.

4.1.3 SU133 FSS Summary

On June 8, 2009, the final 18 systematic FSS soil samples were collected from SU133 and submitted to the on-site laboratory for analysis following the collection of gamma scan readings and direct measurements. No readings or measurements were found above the investigation levels, and no radioactivity above the release criteria was identified in the FSS soil samples for any ROC. The trench unit gamma scan ranges and direct measurements were presented in Attachment 1 of the SU133 SUPR (Appendix E). Figure 4-1 identifies the approximate FSS sample collection locations in the trench survey unit.

For the FSS, SU133 was defined as the sum of the trench unit and the backfill material composed of both radiologically processed and released excavated soil and a volume of imported fill. The average net residual radioactivity concentrations for the backfill material were 0.046 pCi/g for Cs-137, 0.114 pCi/g for Sr-90, and 0.260 pCi/g for Ra-226. The trench unit average net residual radioactivity concentrations were 0.032 pCi/g for Cs-137, 0.270 pCi/g for Sr-90, and 0.003 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling using the larger of the MDL or reported activity resulted in a net residual dose of 4.368 mrem/y with an increased cancer risk of 7.011×10^{-5} for the backfill material and 0.9894 mrem/y with an increased cancer risk of 1.290×10^{-5} for the trench unit. The modeling parameters and results were provided in the SU133 SUPR (Appendix E).

The results of the modeling efforts determined that the potential SU133 dose due to activity concentrations greater than or equal to the MDL were 4.368 mrem/y with a net increase in cancer risk of 7.011×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU133 SUPR provided in Appendix E.

4.1.4 SU133 Backfill Activities

The RASO concurred with backfilling SU133 on July 27, 2009 and backfilling activities commenced the same day (Table 3-1). Backfill activities were initiated using ES Unit 180, followed by ES Units 177 and 178 (Table 3-4).

Compaction testing was performed on August 5, 2009 followed by the placement of additional imported fill. Approximately 1,227 cubic yards of soil was used as backfill material. Final soil compaction testing was performed and certification achieved for SU133 on November 3, 2009. Site restoration activities, including a discussion of backfill compaction, are presented in Section 7.0 of this RACR. Compaction test results are provided in Appendix I.

4.2 TRENCH SURVEY UNIT 139

Trench Survey Unit 139 (SU139) is located in the eastern portion of Parcel UC1 on the north side of Spear Avenue (Figure 4-1). It connects to Trench Survey Unit 147 on the west and Trench Survey Unit 140 on the east. SU139 terminates on the south just beyond the Parcel UC1 property boundary where it ties into Trench Survey Unit 123, which is located in Parcel G. A small, shallow connector trench, approximately 72 linear feet in length, was excavated to connect a small 5-linear-foot length of trench to SU139 to complete the survey unit.

Four storm drain lines (trench segments 02-D26-00-1D, -1E, -1H, and -3I) and seven sanitary sewer lines (trench segments 02-D26-00-2A, -2C, -3A, -3B, -3C, -3E, and -8D) were excavated to form SU139 (Figures 3-1 and 4-1). Following completion of excavation activities, SU139 exhibited a total exposed surface area of 696 m² and was 347 linear feet in length. The depth of the trench survey unit ranged from 3 feet to 15 feet bgs (Table 3-2). Groundwater was encountered between 8 and 10 feet bgs.

4.2.1 SU139 Removal Action Activities

Excavation activities for SU139 were initiated on March 23, 2009 in trench segment 02-D26-00-3E, and the removal of the pipe, manholes, and soil associated with this trench survey unit was completed on May 5, 2009. A total of 118 truckloads (about 928 cubic yards) of soil were excavated from SU139 and transferred to RSY2 for processing (Tables 3-3 and 3-4).

Approximately 519 linear feet of pipe was removed during the SU139 excavation activities. As shown in Table 3-2, the storm drain pipe removed from trench segment 02-D26-00-1D was 8-inch-diameter cast iron located at a depth of 2 feet bgs and the storm drain pipe removed from trench segment 02-D26-00-1E was 12-inch-diameter concrete located between 9 feet and 11 feet bgs. Storm drain pipe removed from trench segment 02-D26-00-1H was 12-inch-diameter VCP located between 5 feet and 9 feet bgs, and storm drain pipe removed from trench segment 02-D26-00-3I was 8-inch-diameter corrugated metal located 1 foot bgs. Trench segments 02-D26-00-2A and -2C were 33-inch-diameter concrete sanitary sewer lines located between 10 feet and 12 feet bgs. Sanitary sewer lines 02-D26-00-3A, -3B, and -3C were 8-inch-diameter cast iron located at depths ranging from 2 feet to 5 feet bgs.

About 13 linear feet of previously unidentified trench segment 02-D26-00-8D was found in April 2009 running parallel to trench segment 02-D26-00-2C. This 6-inch-diameter VCP sanitary sewer line extended from SU139 on the east into Trench Survey Unit 147 on the west and terminated at both ends without connecting into either a manhole or other pipe. The majority of pipe removed from SU139 disintegrated upon removal, and the debris was transferred along with the excavated soil to RSY2 for processing. The remainder of the pipe was placed in LLRW bins for disposal by the DON's LLRW contractor (Table 3-8).

Sufficient sediment was found in excavated piping for sample collection and analysis, as indicated in the SU139 SUPR (Appendix E). The majority of the sediment samples analyzed did not show the presence of radioactivity above the release criteria. Four sediment samples identified Cs-137 contamination and one pipe sediment sample identified Ra-226 activity above the release criteria (Table 3-5).

A total of five manholes were excavated from SU139 identified as MH266, MH269, MH270, MH271, and MH318 (Figure 4-1). These five manholes were crushed and placed in LLRW bins for disposal (Table 3-8). Only Manhole MH266 contained a sufficient quantity of sediment for sample collection and analysis; however, no radioactivity above the release criteria was identified in this sediment sample. The laboratory analytical reports for the sediment samples are provided in Appendix C.

Based on the Cs-137 and Ra-226 activity identified above the release criteria in the SU139 sediment samples, a total of 13 investigative soil samples were collected from the bottom of SU139 on June 11, 2009 and submitted to the on-site laboratory. The analytical results indicated

the presence of Ra-226 activity above the release limit in one investigative soil sample at 1.5045 pCi/g; no Cs-137 was identified in these samples. Figure 4-2 identifies the approximate location of the Ra-226 contaminated soil sample collected from SU139.

Approximately 2 cubic yards of soil was remediated from trench segment 02-D26-00-3A on June 19, 2009 based on the elevated Ra-226 result. The remediated soil was placed in LLRW bin BKRU025819G4 for disposal (Table 3-7). Following remediation, three postremediation samples were collected and submitted to the on-site laboratory for analysis. No radioactivity above the release criteria was identified in the postremediation samples.

In total, 16 investigative samples were collected from SU139 and analyzed by the on-site laboratory. Table 3-7 lists the estimated volume of soil remediated from SU139 by trench segment and provides the disposal date as well as the associated LLRW bin. The on-site and off-site laboratory analytical reports for SU139 are presented in Attachment 2, and the off-site laboratory quality assurance data are included in Attachment 6 of the SU139 SUPR provided in Appendix E.

4.2.2 SU139 Piping Remaining in Place

No known storm drain or sanitary sewer piping associated with SU139 remained in place on Parcel UC1 following the removal action.

4.2.3 SU139 FSS Summary

The 18 systematic FSS soil samples were collected from SU139 on June 30, 2009 following the completion of gamma scan readings and direct measurements. No readings or measurements were identified above the investigation levels and no radioactivity above the release criteria was identified in the FSS soil samples for any ROC. The trench unit gamma scan ranges and direct measurements were presented in Attachment 1 of the SU139 SUPR provided in Appendix E. The approximate locations of the systematic FSS soil samples are depicted on Figure 4-1.

For the FSS, SU139 was defined as the sum of the trench unit and the backfill material composed of both radiologically processed and released excavated soil and a volume of imported fill. The average net residual radioactivity concentrations for the backfill material were 0.043 pCi/g for Cs-137, 0.180 pCi/g for Sr-90, and 0.226 pCi/g for Ra-226. The trench unit average net residual radioactivity concentrations were 0.037 pCi/g for Cs-137, 0.240 pCi/g for Sr-90, and 0.147 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling using the larger of the MDL or reported activity resulted in a net residual dose of 3.701 mrem/y with an increased cancer risk of 5.967×10^{-5} for the backfill material and

2.772 mrem/y with an increased cancer risk of 4.348×10^{-5} for the trench unit. The modeling parameters and results were documented in the SU139 SUPR (Appendix E).

The results of the modeling efforts determined that the potential SU139 dose due to activity concentrations greater than or equal to the MDL were 3.701 mrem/y with a net increase in cancer risk of 5.967×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU139 SUPR (Appendix E).

4.2.4 SU139 Backfill Activities

The RASO concurred with backfilling SU139 on August 25, 2009 and field activities commenced the following day. Soil selected for use as backfill included ES Units 185, 186, 187, 190 and 198 as well as imported fill (Tables 3-1 and 3-4). Backfill activities were initiated for SU139 using ES Unit 186 followed by ES Units 185, 187, 190, and 198. In addition to the ES Units, imported fill was used to complete the trench.

Compaction testing was performed and certification achieved on November 3, 2009. At the completion of backfilling and compaction activities, an estimated 1,206 cubic yards of soil was placed in SU139. Compaction and site restoration activities are presented in Section 7.0 of this RACR and the compaction test results are provided in Appendix I.

4.3 TRENCH SURVEY UNIT 140

Trench Survey Unit 140 (SU140) is located toward the east end of Parcel UC1 on the north side of Spear Avenue (Figure 4-1). It connects to SU139 on the west and ties into Survey Unit 148 on the east. This survey unit terminates at a shallow surface drain (Manhole MH255) with no further connecting pipe. On its northwest end, SU140 ties into Trench Survey Unit 135 on Parcel D-2. SU140 turns south toward Parcel G at Manholes MH264 and MH265, and these trench segments then connect to Survey Unit 121 in Parcel G.

SU140 is comprised of four storm drain lines (trench segments 02-D26-00-1A, -1D, -1G, and -1I) and three sanitary sewer lines (trench segments 02-D26-00-2A, -3B, and -8E) as depicted on Figures 3-1 and 4-1. The majority of the excavated SU140 trench walls were vertical due to the presence of a subsurface rock formation (Photograph 4-1). Following the completion of excavation activities, the total exposed surface area of SU140 was 934 m² and the trench had a length of 401 linear feet (Table 3-1). The depth of the trench survey unit ranged from 2 feet to 15 feet in depth (Table 3-2). Groundwater was encountered between 3 feet and 11 feet bgs in SU140.

4.3.1 SU140 Removal Action Activities

Excavation activities commenced for SU140 on March 24, 2009 in trench segment 02-D26-00-1G and were completed on June 15, 2009 in trench segment 02-D26-00-2A. Sanitary sewer trench segment 02-D26-00-8E was not identified in the Design Plan (TtEC 2008c), but was discovered running parallel to pipe in trench segment 02-D26-00-2A. As measured in the field, 90 linear feet of trench segment 02-D26-00-8E was removed during the excavation activities. In addition, Manhole MH251 was not identified in the Design Plan but was found on Spear Avenue a few feet south of Manhole MH255 (Figure 4-1). This concrete surface drain was not connected to any visible piping and was removed on June 15, 2009. Although trench segment 02-D26-00-1B was identified in the Design Plan (TtEC 2008c), it was not found after several excavation attempts. A total of 113 truckloads (about 609 cubic yards) of soil was excavated from SU140 and transferred to RSY2 for processing (Table 3-4).

During excavation activities, approximately 503 linear feet of pipe was removed from SU140. Trench segments 02-D26-00-1A and -2A contained 12-inch-diameter and 33-inch-diameter concrete pipe, and trench segments 02-D26-00-1D and -3B contained 8-inch-diameter cast iron pipe (Table 3-2). Trench segment 02-D26-00-1I contained 8-inch-diameter corrugated metal pipe, and trench segment 02-D26-00-8E contained 6-inch-diameter VCP. SU140 sanitary sewer pipe was found in the trenches at depths ranging from 2 feet to 15 feet bgs (Table 3-2). Storm drain pipe excavated from SU140 was found in the trenches at depths ranging from 1 foot to 4 feet bgs. The majority of the pipe disintegrated upon removal and was transferred along with the excavated soil to RSY2 for processing. The remainder of the pipe was placed in LLRW bins for disposal by the DON's radiological waste contractor (Table 3-8).

Adequate sediment was found in excavated piping for sample collection and analysis, as discussed in the SU140 SUPR (Appendix E). Two of the sediment samples did not indicate the presence of radioactivity above the release criteria for any ROC; however, Cs-137 above the release limit was identified in some sediment samples (Table 3-5). The analytical results for the sediment samples are provided in Appendix C.

As shown on Figure 4-1, a total of four manholes were associated with SU140 (MH251, MH255, MH264, and MH265). Sufficient sediment for sample collection was available in Manholes MH251, MH264, and MH265. The laboratory analytical results for these three sediment samples did not indicate the presence of radioactivity above the release criteria for any ROC.

Based on the contaminated sediment samples, five investigative soil samples were collected from the bottom of the trench and submitted to the on-site laboratory for analysis. No radioactivity above the release criteria was identified for any ROC in these five samples.

On June 23, 2009, 18 soil samples were collected from SU140 and submitted to the laboratory for analysis (Table 3-1). The analytical results indicated the presence of Cs-137 above the

release criteria at 0.19605 pCi/g in sample 02-UCT-140-23. No additional ROCs were identified above the release criteria in the 18 soil samples. Figure 4-2 depicts the approximate location of the contaminated soil sample in SU140.

Based on the Cs-137 contaminated soil result, an estimated 3 cubic yards of soil was placed in LLRW bin GFLU001191G3 for disposal on July 1, 2009 (Table 3-7). Following remediation, three postremediation confirmation samples were collected and submitted to the on-site laboratory. No radioactivity above the release criteria was identified in these soil samples for any ROC.

4.3.2 SU140 Piping Remaining in Place

No known storm drain or sanitary sewer piping associated with SU140 remained in place on Parcel UC1 following the removal action.

4.3.3 SU140 FSS Summary

Eighteen systematic FSS soil samples were collected from SU140 on July 8, 2009 and submitted to the on-site laboratory for analysis following the collection of gamma scan readings and direct measurements. Some scan readings were found above the investigation levels, but none of the direct measurements exceeded the investigation levels. The trench unit gamma scan ranges and direct measurements were presented in Attachment 1 of the SU140 SUPR (Appendix E). In addition, the laboratory analytical results did not indicate the presence of radioactivity above the release criteria for any ROC in the 18 FSS soil samples. The on-site and off-site laboratory analytical reports for each soil sample are presented in Attachment 2 and the off-site laboratory quality assurance data are included in Attachment 6 of the SU140 SUPR (Appendix E).

For the FSS, SU140 was defined as the sum of the trench unit and the backfill material composed of both radiologically processed and released excavated soil and a volume of imported fill. The average net residual radioactivity concentrations for material used as backfill were 0.042 pCi/g for Cs-137, 0.212 pCi/g for Sr-90, and 0.217 pCi/g for Ra-226. The trench unit average net residual radioactivity concentrations were 0.037 pCi/g for Cs-137, 0.230 pCi/g for Sr-90, and 0.095 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling for SU140 using the larger of the MDL or reported activity resulted in a net residual dose of 4.463 mrem/y with an increased cancer risk of 6.896×10^{-5} for the backfill material and 2.51 mrem/y with an increased cancer risk of 3.735×10^{-5} for the trench unit. The modeling parameters and results were documented in the SU140 SUPR (Appendix E).

The results of the modeling efforts determined that the potential SU140 dose due to activity concentrations greater than or equal to the MDL were 4.463 mrem/y with an increased cancer

risk of 6.896×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU140 SUPR (Appendix E).

4.3.4 SU140 Backfill Activities

The RASO concurred with backfilling SU140 on August 28, 2009 after reviewing the FSS results. The material backfilled into this survey unit included ES Unit 200 and ES Unit 224 as well as imported fill (Tables 3-1 and 3-4). Backfill activities were initiated on October 27, 2009 with the placement of ES Unit 200 followed by ES Unit 224 and a quantity of imported fill on October 30, 2009.

Soil compaction testing for SU140 was performed and certification achieved on November 3, 2009. At the completion of backfilling activities, approximately 792 cubic yards of soil was placed in SU140. Soil compaction and site restoration activities are described in Section 7.0.

4.4 TRENCH SURVEY UNIT 146

Trench Survey Unit 146 (SU146) is located toward the west end of Spear Avenue in Parcel UC1 (Figure 4-1). SU146 connects to Trench Survey Unit 134 (Parcel D-2) on the north, Trench Survey Unit 147 on the east, Trench Survey Unit 123 (Parcel G) on the south, and SU133 on the west. It is comprised of four sanitary sewer trench segments including 02-D26-00-2D, -2E, -3F, and -8C and one storm drain trench segment identified as 02-D26-00-5A (Figures 3-1 and 4-1).

SU146 was excavated at near-vertical due to the presence of a subsurface rock formation and a concrete beam located at the eastern end of the survey unit. Following the completion of excavation activities, SU146 exhibited an exposed surface area of 944 m² and was 383 linear feet in length. The depth of this trench survey unit ranged from 7 feet to 17 feet bgs (Table 3-2). Groundwater was encountered at approximately 10.5 feet bgs.

4.4.1 SU146 Removal Action Activities

Excavation activities for SU146 were initiated on April 6, 2009 beginning with trench segment 02-D26-00-3F (Figure 4-1). During excavation, a previously unidentified sanitary sewer line was found running parallel to trench segment 02-D26-00-3F and was designated as 02-D26-00-8C. Only 10 linear feet of this pipe section was found extending from west to east in the upper wall of trench segment 02-D26-00-3F. Excavation of SU146 was completed on June 17, 2009. A total of 110 truckloads (about 844 cubic yards) of soil were removed from SU146 and transferred to RSY2 for processing (Tables 3-3 and 3-4).

Approximately 400 linear feet of pipe was excavated from SU146 during the removal action. Sanitary sewer trench segments 02-D26-00-2D and -3F contained 33-inch-diameter pipe, trench segment -2E contained 10-inch-diameter VCP, and trench segment -8C contained 6-inch-diameter

VCP (Table 3-2). The sanitary sewer trench segments were located at depths ranging from 7 feet to 14 feet bgs. Storm drain trench segment 02-D26-00-5A contained 15-inch-diameter concrete pipe and was located at depths of 6 feet to 11 feet bgs. The majority of the pipe disintegrated upon removal and was transferred along with the excavated soil to RSY2 for processing. The remainder of the pipe was placed in LLRW bins for disposal by the DON's LLRW contractor (Table 3-8).

An adequate volume of sediment was found in SU146 pipe for sample collection and analysis. Cs-137 and Ra-226 contamination was identified in several sediment samples (Table 3-5). The laboratory analytical results for the sediment samples are provided in Appendix C.

Manhole MH275 was removed from SU146 on April 9, 2009. Insufficient sediment was found for sample collection and analysis. As shown in Table 3-8, Manhole MH275 was crushed and placed in bins GFLU001159G8 and GFLU001206G9 on April 20, 2009 for disposal by the DON's LLRW contractor.

In total, 21 investigative soil samples were collected from SU146 and submitted to the on-site laboratory for analysis (Table 3-1). The first 18 soil samples were collected on July 14, 2009. Only one soil sample indicated the presence of Cs-137 radioactivity above the release limit at 0.11931 pCi/g (Figure 4-2). Based on this analytical result, approximately 3 cubic yards of soil was placed in LLRW bin GFLU001221G3 on July 29, 2009 for disposal (Table 3-7). Following removal, three postremediation samples were collected and analyzed in the on-site laboratory with no radioactivity identified above the release criteria.

4.4.2 SU146 Piping Remaining in Place

No known storm drain or sanitary sewer piping associated with SU146 remained in place on Parcel UC1 following the removal action.

4.4.3 SU146 FSS Summary

The 18 systematic FSS soil samples were collected on August 4, 2009 following gamma scan readings and direct measurements (Table 3-1). No readings or measurements were found above the investigation levels and no radioactivity above the release criteria was identified in the FSS samples for any ROC. The trench unit gamma scan ranges and direct measurements were presented in Attachment 1 of the SU146 SUPR provided in Appendix E. Figure 4-1 depicts the locations of the FSS soil samples in the survey units. The on-site and off-site laboratory analytical reports for each soil sample are presented in Attachment 2, and the off-site laboratory quality assurance data are included in Attachment 6 of the SU146 SUPR (Appendix E).

For the FSS, SU146 was defined as the sum of the trench unit and the backfill material composed of radiologically processed and released excavated soil and a volume of imported fill. The

average net residual radioactivity concentrations for the backfill material were 0.044 pCi/g for Cs-137, 0.220 pCi/g for Sr-90, and 0.209 pCi/g for Ra-226. The trench unit average net residual radioactivity concentrations were 0.034 pCi/g for Cs-137, 0.165 pCi/g for Sr-90, and -0.010 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling for SU146 using the larger of the MDL or reported activity resulted in a net residual dose of 4.399 mrem/y with an increase in cancer risk of 6.771×10^{-5} for the backfill material and 0.6982 mrem/y with an increased cancer risk of 9.073×10^{-6} for the trench unit. The dose and risk modeling parameters and results were documented in the SU146 SUPR (Appendix E).

The results of the modeling efforts determined that the potential SU146 dose due to activity concentrations greater than or equal to the MDL were 4.399 mrem/y with an increased cancer risk of 6.771×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU146 SUPR (Appendix E).

4.4.4 SU146 Backfill Activities

The RASO concurred with backfilling SU146 on August 25, 2009. ES Units 179, 183, and 227, and a volume of imported fill were selected as the appropriate backfill material (Tables 3-1 and 3-4). Backfill operations were initiated on October 8, 2009 with the placement of ES Unit 227 and continued with ES Units 179 and 183, followed by the imported fill. An estimated 1,096 cubic yards of soil was placed in SU146 during backfill operations.

Soil compaction testing for SU146 was performed and certification achieved on November 3, 2009. Soil compaction and site restoration activities are presented in Section 7.0 of this RACR.

4.5 TRENCH SURVEY UNIT 147

Trench Survey Unit 147 (SU147) is located midway down Spear Avenue in Parcel UC1 and just south of Building 813 (Photograph 4-3). This trench survey unit connects to SU139 on the east, Trench Survey Unit 123 (Parcel G) on the south, and SU146 on the west (Figure 4-1).

SU147 consists of three sanitary sewer trench segments identified as 02-D26-00-2C, -2D, and -8D and four storm drain trench segments designated as 02-D26-00-4A, -4B, -4C, and -4D (Figures 3-1 and 4-1). With the exception of trench segment 02-D26-00-8D, the excavated trench segments were identified in the Design Plan (TtEC 2008c). Trench segment 02-D26-00-8D was found in the main trench during excavation activities. A shallow connector trench was excavated between Manholes MH398, MH395, and MH394 on the south side of Spear Avenue to join these manholes and associated pipe into one survey unit.

The lateral extent of the excavations was limited in several areas of SU147 due to the presence of a subsurface rock formation that resulted in near-vertical trench walls (Photograph 4-1). Following the completion of excavation, SU147 had an exposed surface area of 889 m² and a length of 450 linear feet. The depth of the trench survey unit ranged from 3 feet to 15 feet bgs (Table 3-2). Groundwater was encountered at depths of 8 feet to 12 feet bgs.

4.5.1 SU147 Removal Action Activities

Excavation activities for SU147 were initiated on March 20, 2009 with trench segment 02-D26-00-4D around Manhole MH398 (Figure 4-1). Trench segment 02-D26-00-8D was not identified in the Design Plan (TtEC 2008c), but was a continuation of the same trench segment in SU139 to the east. Excavation of SU147 was completed in trench segment 02-D26-00-4A on June 18, 2009. A total of 129 truckloads (approximately 745 cubic yards) of soil were removed from SU147 and transferred to RSY2 for processing (Tables 3-3 and 3-4).

Approximately 641 linear feet of pipe was removed from SU147. Sanitary sewer trench segments 02-D26-00-2C and -2D contained 33-inch-diameter concrete pipe and trench segment 02-D26-00-8D contained 6-inch-diameter VCP (Table 3-2). Storm drain trench segments 02-D26-00-4B and -4C contained 10-inch-diameter concrete pipe, while 02-D26-00-4A contained 10-inch-diameter VCP, and 02-D26-00-4D contained 10-inch-diameter VCP. The pipe was located in the trenches between 2 feet and 12 feet bgs. The majority of the pipe disintegrated upon removal and was transferred along with the excavated soil to RSY2 for processing. The remainder of the pipe was placed in bins for disposal by the DON's LLRW contractor (Table 3-8).

A sufficient volume of sediment was found in pipe excavated from SU147. No radioactivity above the release criteria was identified in two of the sediment samples; however, Ra-226 above the release criteria was identified in one sediment sample and Cs-137 contamination was identified in three sediment samples (Table 3-5). The sediment sample laboratory analytical results are provided in Appendix C.

Manholes MH273, MH274, MH394, MH395, and MH398 were removed from SU147 and were placed in LLRW bins for disposal by the DON's radiological waste contractor (Table 3-8). Only Manhole MH274 contained a sufficient volume of sediment for sample collection and analysis. No radioactivity above the release criteria was identified for any ROC in this sediment sample.

4.5.2 SU147 Piping Remaining in Place

No known storm drain or sanitary sewer piping associated with SU147 remained in place on Parcel UC1 following the completion of the removal action.

4.5.3 SU147 FSS Summary

On July 16, 2009, 18 systematic FSS soil samples were collected from SU147 and submitted to the on-site laboratory for analysis following the collection of gamma scan readings and direct measurements (Table 3-1). No readings or measurements were found above the investigation levels and there was no indication of radioactivity above the release criteria for any ROC in the analytical results. The trench unit gamma scan ranges and direct measurements were presented in Attachment 1 of the SU147 SUPR (Appendix E). The on-site and off-site laboratory analytical reports for each soil sample are presented in Attachment 2, and the off-site laboratory quality assurance data are included in Attachment 6 of the SU147 SUPR (Appendix E). Figure 4-1 identifies the approximate FSS sample collection locations in the trench survey unit.

For the FSS, SU147 was defined as the sum of the trench unit and the backfill material composed of both radiologically processed and released excavated soil and a volume of imported fill (Table 3-1). The average net residual radioactivity concentrations for material used as backfill in Survey Unit 147 were 0.047 pCi/g for Cs-137, 0.216 pCi/g for Sr-90, and 0.190 pCi/g for Ra-226. The trench unit average net residual radioactivity concentrations were 0.038 pCi/g for Cs-137, 0.250 pCi/g for Sr-90, and -0.008 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling for SU147 using the larger of the MDL or reported activity resulted in a net residual dose of 3.906 mrem/y with an increased cancer risk of 6.039×10^{-5} for the backfill material and 0.9752 mrem/y with an increased cancer risk of 1.260×10^{-5} for the trench unit. The dose and risk modeling parameters and results were documented in the SU147 SUPR (Appendix E).

The results of the modeling efforts determined that the potential SU147 dose due to activity concentrations greater than or equal to the MDL were 3.906 mrem/y with a net increase in cancer risk of 6.039×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU147 SUPR (Appendix E).

4.5.4 SU147 Backfill Activities

Concurrence to backfill SU147 was obtained from the RASO on September 11, 2009. Radiologically processed and released excavated soil stockpiles ES Units 181, 184, and 189, and a volume of imported fill was selected for use as backfill material (Tables 3-1 and 3-4). Backfill activities for SU147 commenced on October 23, 2009 and continued through November 2, 2010 with the addition of imported fill. An estimated 968 cubic yards of soil was placed in SU147 as backfill material.

Soil compaction testing was performed and certification achieved on November 3, 2009. Soil compaction and site restoration activities are described in Section 7.0.

4.6 TRENCH SURVEY UNIT 148

Trench Survey Unit 148 (SU148) is located at the eastern end of Parcel UC1 near the intersection of Spear and Fisher Avenues (Figure 4-1). SU148 connects to Trench Survey Units 149 and 150 on the east and SU140 on the west. A fresh water line that was not removed during excavation activities extends the entire length of the trench down Spear Avenue. A subsurface rock formation limited the lateral extent of the excavation and resulted in near-vertical trench walls (Photograph 4-1).

SU148 is comprised of four sanitary sewer trench segments identified as 02-C15-00-1H, -1J and -2A, and 02-D26-00-2A (Figures 3-1 and 4-1). Following the completion of excavation activities, SU148 exhibited a total exposed surface area of 612 m² and was 164 linear feet in length (Table 3-1). As shown in Table 3-2, the depth of the survey unit ranged from 15 feet to 17 feet bgs. Groundwater was encountered at approximately 11 feet bgs.

4.6.1 SU148 Removal Action Activities

Excavation activities for SU148 were initiated on June 15, 2009 in trench segment 02-D26-00-2A as identified in the Design Plan (TtEC 2008c) and were completed on July 23, 2009 in trench segment 02-D15-00-1J (Figure 4-1). A total of 57 truckloads (approximately 807 cubic yards) of soil were removed from SU148 and transferred to RSY2 for processing (Tables 3-3 and 3-4).

Based on field measurements, approximately 164 linear feet of pipe was removed from SU148. Sanitary sewer trench segment 02-C15-00-1H contained 24-inch-diameter and -1J contained 21-inch-diameter concrete pipe (Table 3-2). Trench segments 02-D15-00-2A and 02-D26-00-2A contained 33-inch-diameter concrete pipe. The pipe in SU148 was located at depths ranging from 12 feet to 15 feet bgs. Pipe that disintegrated upon removal was transferred to RSY2 along with the excavated soil for processing. Piping that did not crumble during the removal action was placed in waste bins for disposal by the DON's LLRW contractor (Table 3-8).

A sufficient volume of sediment for sample collection was found in pipes removed during the excavation of SU148. The majority of the sediment samples analyzed did not indicate the presence of radioactivity above the release criteria for any ROC; however, Cs-137 contamination was identified in some sediment samples (Table 3-5). The laboratory analytical reports for the sediment samples are provided in Appendix C.

Manhole MH262 was excavated from SU148 on July 22, 2002. An inadequate volume of sediment was available for sample collection and analysis, and MH262 was placed in LLRW bin BKRU026198G4 on July 31, 2009 for disposal (Table 3-8).

Initially, 18 soil samples were collected on August 7, 2009 and submitted to the on-site laboratory for analysis (Table 3-1). The analytical results indicated the presence of Ra-226

activity above the release limit in one soil sample at 2.0596 pCi/g (Figure 4-2). Based on this result, approximately 4 cubic yards of soil was remediated from trench segment 02-D15-00-2A. The remediated soil was placed in LLRW bin BKRU026006G6 on August 13, 2009 for disposal (Table 3-7). Following remediation, three postremediation samples were collected and submitted to the on-site laboratory for analysis. No radioactivity above the release criteria was identified for any ROC in these samples.

Following an evaluation of the postremediation samples, 18 soil samples were collected from SU148 on August 18, 2009 and submitted to the on-site laboratory for analysis (Table 3-1). Of the 18 soil samples, 4 showed the presence of radioactivity above the release criteria. Ra-226 was identified in two soil samples at 1.9861 pCi/g and 2.4577 pCi/g, and Cs-137 was identified in a third sample at 0.11682 pCi/g. The fourth sample indicated the presence of both Ra-226 and Cs-137 above the release criteria at 1.5831 pCi/g and 0.12956 pCi/g, respectively. The approximate locations of the contaminated samples are indicated on Figure 4-2. On August 25, 2009, about 9 cubic yards of soil was remediated from trench segment 02-D15-00-2A and eight postremediation samples were collected and analyzed (Table 3-7). No activity above the release criteria was identified for any ROC in these samples.

On August 31, 2009, 18 soil samples were collected and analyzed by the on-site laboratory (Table 3-1). Of the 18 samples, one indicated the presence of Ra-226 activity above the release limit at 1.5483 pCi/g. Based on this result, about 4 cubic yards of soil was remediated from trench segment 02-D15-00-2A. Two postremediation samples were collected for analysis following the remediation activities. No activity above the release criteria was identified in either of these samples for any ROC.

Following an evaluation of the postremediation samples, 18 systematic soil samples were collected on September 10, 2009 and submitted to the on-site laboratory for analysis. Two of the 18 soil samples indicated the presence of Ra-226 above the release limit at 2.5227 pCi/g and 2.4857 pCi/g. On September 14, 2009, approximately 5.5 cubic yards of soil was remediated from trench segment 02-D15-00-2A. The remediated soil was placed in LLRW bins for disposal by the DON's radiological waste contractor (Table 3-7). Four postremediation samples were collected and submitted to the on-site laboratory for analysis. One of the four postremediation samples indicated the presence of Ra-226 activity above the release limit at 1.6309 pCi/g (Figure 4-2). Because elevated Ra-226 activity was identified, about 4.5 cubic yards of soil was remediated from trench segment 02-D15-00-2A. Following the remediation effort, two postremediation samples were collected for analysis. No activity above the release criteria was identified in either of the two postremediation samples.

In total, 91 investigative soil samples were collected from SU148 and analyzed by the on-site laboratory during the removal action, and approximately 27 cubic yards of soil was remediated and placed in LLRW bins for disposal (Table 3-7). Figure 4-2 shows the locations of each of the

contaminated soil samples identified in SU148. The on-site and off-site laboratory analytical reports for SU148 are presented in Attachment 2, and the off-site laboratory quality assurance data are included in Attachment 6 of the SU148 SUPR (Appendix E).

4.6.2 SU148 Piping Left in Place

No known storm drain or sanitary sewer piping associated with SU148 remained in place on Parcel UC1 following the completion of the removal action.

4.6.3 SU148 FSS Summary

On September 21, 2009, 18 systematic FSS soil samples were collected from SU148 and submitted to the on-site laboratory for analysis following the collection of gamma scan readings and direct measurements. Scan readings were found above the investigation levels; however, no elevated direct measurements were noted. No radioactivity above the release criteria was identified in the FSS soil samples for any ROC (Table 3-1). The trench unit gamma scan ranges and direct measurements were presented in Attachment 1 of the SU148 SUPR (Appendix E). Figure 4-1 identifies the approximate FSS sample collection locations in the trench survey unit.

For the FSS, SU148 was defined as the sum of the trench unit and the backfill material composed of radiologically processed and released excavated soil and a volume of imported fill. The average net residual radioactivity concentrations for backfill material in Survey Unit 148 were 0.046 pCi/g for Cs-137, 0.170 pCi/g for Sr-90, and 0.192 pCi/g for Ra-226. The trench unit average net residual radioactivity concentrations were 0.048 pCi/g for Cs-137, 0.165 pCi/g for Sr-90, and 0.295 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling for SU148 using the larger of the MDL or reported activity resulted in a net residual dose of 2.967 mrem/y with an increased cancer risk of 4.846×10^{-5} for the backfill material and 4.277 mrem/y with an increased cancer risk of 7.074×10^{-5} for the trench unit. The dose and risk modeling parameters and results were documented in the SU148 SUPR (Appendix E).

The results of the modeling efforts determined that the potential SU148 dose due to activity concentrations greater than or equal to the MDL were 4.277 mrem/y with an increased cancer risk of 7.074×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU148 SUPR (Appendix E).

4.6.4 SU148 Backfill Activities

The RASO concurred with backfilling SU148 on October 14, 2009. As indicated in Table 3-1, the excavated soil stockpiles selected for use as backfill included ES Units 221, 222, and 226 as

well as a volume of imported fill. Backfill activities were initiated on October 26, 2009 with the placement of ES Unit 222 and continued with the placement of ES Units 221 and 226. Backfilling was completed on November 2, 2009 and compaction testing was performed and certification achieved the following day. An estimated 1,036 cubic yards of soil was placed in SU148 as backfill material. Soil compaction and site restoration activities are described in Section 7.0.

4.7 TRENCH SURVEY UNIT 150

Trench Survey Unit 150 (SU150) is primarily located on the south side of Spear Avenue in Parcel UC1, but continues into the intersection with Fisher Avenue on Parcel UC2 (Figure 4-1). SU150 connects to SU148 on the north, Trench Survey Unit 66 (Parcel G) on the south, and Trench Survey Unit 121 (Parcel G) on the west. This survey unit terminates on the east at the property boundary. Electrical line conduit, concrete banks, as well as fresh water and saltwater lines that were not removed during excavation activities traversed SU150 in a number of locations. These subsurface elements posed several excavation challenges to ensure the integrity of these lines during the removal action; however, no lines were damaged during the excavation activities.

SU150 is comprised of two sanitary sewer lines identified as 02-D15-00-1J and 70-D17-00-3D and seven storm drain lines designated as 02-C15-00-4A; 02-D15-00-4B, -4C, and -8A; 02-D26-00-1F; and 70-D17-00-3K and -8J (Figures 3-1 and 4-1). Trench segments 02-D15-00-4B, -8A, 70-D17-00-8J and -3K run parallel to trench segments 02-D15-00-1J and 70-D17-00-3D. The lateral and vertical extent of the trenches was limited due to the presence of a subsurface rock formation that resulted in near-vertical walls (Photograph 4-1). Following the removal action, SU150 had a total exposed surface area of 682 m² and was 381 linear feet in length. The depth of the survey unit trenches ranged from 6 feet to 10 feet bgs (Table 3-2). Groundwater was encountered at depths ranging from 5 feet to 6 feet bgs.

4.7.1 SU150 Removal Action Activities

The excavation of SU150 commenced on July 17, 2009 with trench segment 02-D26-00-1F. During the excavation activities, about 8 linear feet of two previously unidentified storm drain lines were found and designated as 02-D15-00-8A and 70-D17-00-8J. Excavation of SU150 was completed on July 27, 2009. A total of 83 truckloads (about 550 cubic yards) of soil were excavated from SU150 and transferred to RSY2 for processing (Tables 3-3 and 3-4).

As measured in the field, about 407 linear feet of pipe was removed during the excavation activities. Trench segments 02-C15-00-4A, 02-D15-00-4B, and 70-D17-00-3K contained 24-inch-diameter concrete pipe, and trench segments 02-D15-00-1J, -4C, 02-D26-00-1F, and 70-D17-00-3D contained 21-inch-diameter concrete pipe (Table 3-2). Trench segments 02-D15-00-8A and

70-D17-00-8J contained 6-inch-diameter VCP. The pipe was located in the trenches at depths ranging from 4 feet to 9 feet bgs. The majority of the pipe crumbled upon removal and was transferred along with the excavated soil to RSY2 for processing. As shown in Table 3-8, the remainder of the pipe was placed in bins for disposal by the DON's LLRW contractor.

Although an inadequate volume of sediment was found in the majority of pipe removed from SU150 for sample collection, sediment samples were collected and analyzed as discussed in the SU150 SUPR (Appendix E). Two sediment samples showed Cs-137 activity above the release limit (Table 3-5). The sediment sample analytical results are provided in Appendix C.

Manhole MH263 was removed from SU150 on July 23, 2009; however, an insufficient volume of sediment was found for sample collection. As shown in Table 3-8, MH263 was crushed and placed in LLRW bins for disposal on July 31, 2009.

A total of 18 systematic soil samples were collected from SU150 and submitted to the on-site laboratory for analysis on August 11, 2009 (Table 3-1). Four of the 18 soil samples indicated the presence of Ra-226 above the release limit ranging from 1.8161 pCi/g to 3.3469 pCi/g (Figure 4-2). Based on these results, approximately 12 cubic yards of soil was remediated from trench segments 02-D15-00-4B and 70-D17-00-3K. The remediated soil was placed in LLRW bins for disposal (Table 3-7). Five postremediation samples were collected on August 19, 2009 and submitted to the on-site laboratory for analysis by gamma spectroscopy. Of the five soil samples, one indicated the presence of Ra-226 activity above the release limit at 2.1284 pCi/g (Figure 4-2). Based on this result, an additional 2 cubic yards of soil was remediated from trench segment 70-D17-00-3K followed by the collection of two postremediation soil samples. No radioactivity above the release criteria was identified in either of the two postremediation samples.

In total, 25 investigative soil samples were collected from SU150 and analyzed by the on-site laboratory during the removal action, and approximately 14 cubic yards of soil was remediated and placed in LLRW bins for disposal. Figure 4-2 depicts the locations of the contaminated soil samples in SU150. The on-site and off-site laboratory analytical reports for the soil samples are presented in Attachment 2, and the off-site laboratory quality assurance data are included in Attachment 6 of the SU150 SUPR (Appendix E).

4.7.2 SU150 Piping Remaining in Place

No known storm drain or sanitary sewer piping associated with SU150 remained in place on Parcel UC1 following the completion of the removal action.

4.7.3 SU150 FSS Summary

The final 18 systematic FSS soil samples were collected on August 28, 2009 and submitted to the on-site laboratory for analysis following the collection of gamma scan readings and direct measurements. Scan readings were found above the investigation levels, although no direct measurements indicated the presence of elevated radioactivity. No radioactivity above the release criteria was identified for any ROC in the soil samples. The trench unit gamma scan ranges and direct measurements were presented in Attachment 1 of the SU150 SUPR (Appendix E). Figure 4-1 identifies the approximate FSS sample collection locations in the trench survey unit.

For the FSS, SU150 was defined as the sum of the trench unit and the backfill material composed of both radiologically processed and released excavated soil and a volume of imported fill (Table 3-1). The average net residual radioactivity concentrations for material used as backfill in Survey Unit 150 were 0.048 pCi/g for Cs-137, 0.139 pCi/g for Sr-90, and 0.225 pCi/g for Ra-226. The trench unit average net residual radioactivity concentrations were 0.039 pCi/g for Cs-137, 0.155 pCi/g for Sr-90, and 0.136 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling for SU150 using the larger of the MDL or reported activity resulted in a net residual dose of 3.537 mrem/y with an increased cancer risk of 5.756×10^{-5} for the backfill material and 2.354 mrem/y with an increased cancer risk of 3.759×10^{-5} for the trench unit. The dose and risk modeling efforts were documented in the SU150 SUPR provided in Appendix E.

The results of the modeling efforts determined that the potential SU150 dose due to activity concentrations greater than or equal to the MDL were 3.537 mrem/y with an increased cancer risk of 5.756×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU150 SUPR (Appendix E).

4.7.4 SU150 Backfill Activities

The RASO concurred with backfilling SU150 on October 5, 2009. As indicated in Table 3-1, ES Units 228, 232, 233 and a volume of imported fill were selected for use as backfill material for SU150 (Table 3-4). Backfill operations were initiated on October 5, 2009 with the placement of ES Units 233 and 228 followed by ES Unit 232 and a volume of imported fill. An estimated 715 cubic yards of soil was placed in SU150 during the backfill operations (Table 3-1).

Soil compaction testing was performed for SU150 on November 3, 2009 and certification was achieved at that time. Compaction and site restoration activities are presented in Section 7.0 of this RACR.

4.8 TRENCH SURVEY UNIT 164

Trench Survey Unit 164 (SU164) is located at the west end of Parcel UC1 at the junction of Parcels G and E and where Spear Avenue intersects with Crisp Road (Figure 4-1). SU164 consists of three physically separate trenches. At its eastern end, SU164 connects to Trench Survey Units 104 and 124, both located on Parcel G. At its western end, SU164 connects to Trench Survey Unit 171 and terminates on the south within the 10-foot buffer area at Building 400 on Parcel E. SU164 segments were terminated during excavation near active utility support structures and at the Parcel E property boundary.

SU164 is comprised of four storm drain lines identified as 03-D16-00-1E, -1F, 1G, and -8A and three sanitary sewer lines identified as 03-D16-00-1K, and 03-D16-36-1J and -8A (Table 3-2). Neither trench segment 03-D16-00-8A nor 03-D16-36-8A was identified in the Design Plan (TtEC 2008c). Trench segments 03-D16-36-1J and -8A were both situated within IR Program Site IR-36. The IR Program is discussed in Section 3.9 of this RACR. Following excavation, SU164 exhibited a surface area of 512 m² and was 306 linear feet in length (Table 3-1). The depth of the trench survey unit ranged from 4 feet to 9 feet bgs (Table 3-2).

4.8.1 SU164 Removal Action Activities

SU164 excavation activities were initiated on March 8, 2010, in trench segment 03-D16-00-1F and were completed on March 12, 2010. During excavation, a total of 21 truckloads (about 252 cubic yards) of soil were excavated from SU164 and transferred to RSY2 for processing (Tables 3-3 and 3-4).

About 314 linear feet of pipe was removed during the excavation activities for SU164. The sanitary sewer pipe in trench segments 03-D16-00-1K and 03-D16-36-1J were 8-inch-diameter VCP, and the pipe from trench segment 03-D16-36-8A was 4-inch-diameter cast iron located at depths ranging from 3.5 to 7.75 feet bgs (Table 3-2). The storm drain pipe in trench segments was 4-inch-diameter to 15-inch-diameter VCP located at depths ranging from 3.5 feet to 7.75 feet bgs. The majority of the pipe excavated from SU164 disintegrated upon removal, and the debris was transferred along with the excavated soil to RSY2 for processing. The remainder of the pipe was placed in LLRW bins for disposal by the DON's LLRW contractor (Table 3-8).

Insufficient sediment was available for sample collection in pipe excavated for SU164. Two manholes (MH548 and MH635) were excavated on March 8, 2010. Only Manhole MH635 contained a sufficient volume of sediment for sample collection and analysis. No activity above the release criteria was identified in this sediment sample for any ROC (Table 3-5). The sediment sample analytical results are provided in Appendix C. Both of the SU14 manholes were crushed and disposed of in LLRW bins on March 15, 2010 (Table 3-8).

Because measurements above the investigation levels were identified during the performance of gamma scans in SU164, additional survey activities were performed. The trench unit gamma scan ranges, investigation level, and direct measurement values are provided in Attachment 1 of the SU164 SUPR (Appendix E). Initially, 18 systematic soil samples were collected from SU164 on March 23, 2010 and analyzed by the on-site laboratory (Table 3-1). One soil sample showed the presence of Ra-226 activity above the release limit at 1.8188 pCi/g (Figure 4-2). Based on this analytical result, about 1 cubic yard of soil was placed in LLRW bin GFLU001189G12 for disposal by the DON's radiological waste contractor (Table 3-7). Three postremediation samples were collected and analyzed by the on-site laboratory with no additional contamination identified for any ROC. The on-site and off-site laboratory analytical reports for each SU164 soil sample are presented in Attachment 2, and the off-site laboratory quality assurance data are included in Attachment 6 of the SU164 SUPR (Appendix E).

4.8.2 SU164 Piping Remaining in Place

Excavation activities for storm drain trench segment 03-D16-00-1G were halted following the removal of 13 linear feet of trench and pipe (Figure 4-1). The removal activities were terminated near active line support structures adjacent to a telecommunications box to avoid undermining the integrity of the utilities and to protect worker health and safety. Two swipe samples (HPS-PEPIPE-033010-001) were collected from the estimated 13 linear feet of pipe remaining in place (Table 3-6). The analytical results indicated the presence of beta/gamma activity above the release limits at 2484.43 dpm/100 cm² and 2807.51 dpm/100 cm². Based on these results and in accordance with the Work Instruction for Final Surveys of Potentially Contaminated Piping Systems During Sanitary Sewer & Storm Drain Removal Activities (TtEC 2008a), a solid sample of the remaining pipe (03-PES-PI16001G-01) was collected and submitted to the off-site laboratory for total strontium analysis. The RASO concurred that the analytical results did not indicate the presence of contamination on May 5, 2010. Copies of the radiological survey and laboratory analytical results are provided in Appendix G.

4.8.3 SU164 FSS Summary

On April 2, 2010, 18 systematic FSS soil samples were collected from SU164 and submitted to the on-site laboratory for analysis following the collection and evaluation of gamma scan readings and direct measurements. No readings or measurements were found above the investigation levels, and no radioactivity above the release criteria was identified in the FSS soil samples for any ROC.

For the FSS, SU164 was defined as the sum of the trench unit and the backfill material composed of both radiologically processed and released excavated soil and a volume of imported fill. The average net residual radioactivity concentrations for the backfill material were 0.043 pCi/g for Cs-137, 0.110 pCi/g for Sr-90, and 0.245 pCi/g for Ra-226. The trench unit average net residual

radioactivity concentrations were 0.044 pCi/g for Cs-137, 0.225 pCi/g for Sr-90, and 0.010 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling using the larger of the MDL or reported activity resulted in a net residual dose of 3.164 mrem/y with an increased cancer risk of 5.377×10^{-5} for the backfill material and 0.6665 mrem/y with an increased cancer risk of 9.282×10^{-6} for the trench unit. The modeling results were provided in the SU164 SUPR (Appendix E).

The results of the modeling efforts determined that the potential SU164 dose due to activity concentrations greater than or equal to the MDL were 3.164 mrem/y with a net increase in cancer risk of 5.377×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU164 SUPR (Appendix E).

4.8.4 SU164 Backfill Activities

The RASO concurred with backfilling SU164 on April 28, 2010 and backfilling activities commenced the following day (Table 3-1). Backfill activities were initiated using ES Unit 267 followed by a volume of imported fill (Table 3-4). Approximately 437 cubic yards of material was backfilled into SU164 and the road base layer was placed over SU164 on May 4, 2010. Site restoration activities are described in Section 7.0.

4.9 TRENCH SURVEY UNIT 167

Trench Survey Unit 167 (SU167) is located at the west end of Parcel UC1 on Spear Avenue at the southeast corner of SFRA's Building 808 (Figure 4-1). SU167 connects to SU133 on the north and ties into Trench Survey Unit 168 on the south near the Parcel UC1 property boundary. SU167 consists of one storm drain line (03-D16-00-1A) and two sanitary sewer segments identified as 03-D16-00-1H and -1I. Although trench segment 02-D26-00-6I on the east end of SU167 was identified in the Design Plan (TtEC 2008c), it could not be found during excavation activities and was likely removed during the force main bypass activities performed by the DON in September 2006 (Photograph 4-2). At the completion of excavation, SU167 exhibited an exposed surface area of 422 m² and was 153 linear feet in length (Table 3-1). The depth of the trench survey unit ranged from 10 feet to 12 feet bgs (Table 3-2).

4.9.1 SU167 Removal Action Activities

SU167 excavation activities were initiated on April 14, 2010, in trench segment 03-D16-00-1H. A total of 42 truckloads (approximately 504 cubic yards) of soil were excavated from SU167 and transferred to RSY2 for processing (Tables 3-3 and 3-4). Excavation was completed on April 28, 2010, in trench segment 03-D16-00-1A.

Approximately 167 linear feet of pipe was removed from SU167 during excavation activities. Storm drain trench segment 03-D16-00-1A pipe was 10-inch-diameter concrete located at approximately 9 feet bgs (Table 3-2). Sanitary sewer trench segments 03-D16-00-1H and -II were 24-inch-diameter concrete located at depths ranging from 8 feet to 10 feet bgs. The majority of the pipe disintegrated upon removal and was transferred along with the excavated soil to RSY2 for processing. The remainder of the pipe was placed in LLRW bins for disposal by the DON's radiological waste contractor (Table 3-8).

A sufficient volume of sediment for sample collection and analysis was not found in the pipes excavated from SU167. However, a sediment sample was collected from Manhole MH546 on April 19, 2010 and submitted to the on-site laboratory for analysis. No radioactivity above the release criteria was identified for any ROC in this sample. The sediment sample analytical results are provided in Appendix C.

4.9.2 SU167 Piping Remaining in Place

Excavation activities for storm drain trench segment 03-D16-00-1A were halted near the SFRA and Parcel UC1 property boundary (Figure 4-1). Approximately 94 linear feet of this trench segment is located in Trench Survey Unit 171, with only about 20 linear feet excavated from SU167. As indicated in Table 3-6, about 25 linear feet of trench segment 03-D16-00-1A remains on Parcel UC1 due to its proximity to the property boundary and Building 808.

Sufficient sediment for sample collection and analysis was collected from one pipe excavated from trench segment 03-D16-00-1A. The analytical results did not indicate the presence of radioactivity above the release criteria for any ROC. The sediment sample analytical results are provided in Appendix C.

Based on the sediment sample analytical results and because the remainder of the pipe is in close proximity to non-impacted Building 808 located on the SFRA property, the DON concluded that the remaining 25 linear feet of trench segment 03-D16-00-1A pipe was not radiologically impacted and could be left in place.

4.9.3 SU167 FSS Summary

Eighteen systematic FSS soil samples were collected from SU167 on May 3, 2010 and submitted to the on-site laboratory for analysis following the collection of gamma scan readings and direct measurements. No readings or measurements were found above the investigation levels and no radioactivity above the release criteria was identified in the FSS soil samples for any ROC (Table 3-1). The trench unit gamma scan ranges and direct measurements were presented in Attachment 1 of the SU167 SUPR provided in Appendix E. The on-site and off-site laboratory sample analytical reports are presented in Attachment 2, and the off-site laboratory quality

assurance data are included in Attachment 3 of the SU167 SUPR (Appendix E). Figure 4-1 identifies the approximate FSS sample collection locations.

For the FSS, SU167 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill. The average net residual radioactivity concentrations for the backfill material were 0.053 pCi/g for Cs-137, 0.070 pCi/g for Sr-90, and 0.373 pCi/g for Ra-226. The trench unit average net residual radioactivity concentrations were 0.051 pCi/g for Cs-137, 0.165 pCi/g for Sr-90, and 0.097 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling using the larger of the MDL or reported activity resulted in a net residual dose of 4.163 mrem/y with an increased cancer risk of 7.322×10^{-5} for the backfill material and 1.403 mrem/y with an increased cancer risk of 2.335×10^{-5} for the trench unit. The modeling parameters and results were included in the SU167 SUPR provided in Appendix E.

The results of the modeling efforts determined that the potential SU167 dose due to activity concentrations greater than or equal to the MDL were 4.163 mrem/y with a net increase in cancer risk of 7.322×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU167 SUPR (Appendix E).

4.9.4 SU167 Backfill Activities

The RASO concurred with backfilling SU167 on May 6, 2010, and backfill activities were initiated on May 7, 2010, with imported fill (Table 3-1). No ES units were available for use as backfill because of the expedited schedule to support the local HPS tenants. Approximately 493 cubic yards of import fill material was used as backfill in SU167 and backfill activities were completed on May 11, 2010. Site restoration activities are described in Section 7.0.

4.10 TRENCH SURVEY UNIT 168

Trench Survey Unit 168 (SU168) is located at the western end of Parcel UC1 at the juncture of Spear Avenue, Crisp Road (Parcel UC3), and 6th Avenue (Figure 4-1). SU168 terminates on the north and west at the Parcel UC1 property boundary. It connects to SU167 on the east and Trench Survey Unit 171 on the south at Manhole MH545. An 8-inch-diameter saltwater line, 12-inch- and 16-inch-diameter water lines, and a 10-inch-diameter gas line found during the excavation activities were not removed.

SU168 is comprised of four sanitary sewer trench segments identified as 03-D16-00-1B, -1D, -1H, and -8C. Following the completion of the excavation activities, SU168 exhibited a total exposed surface area of 746 m² and was 217 linear feet in length (Table 3-1). The depth of the excavated trench survey unit ranged from 10 feet to 20 feet bgs (Table 3-2).

4.10.1 SU168 Removal Action Activities

The SU168 excavation activities were initiated on April 7, 2010, in trench segment 03-D16-00-1B. A total of 78 truckloads (approximately 936 cubic yards) of soil were excavated from SU168 and transferred to RSY2 for processing (Tables 3-3 and 3-4). Although trench segment 03-D16-00-8C was not identified in the Design Plan (TtEC 2008c), about 14 linear feet of pipe was found during the excavation of trench segment 03-D16-00-1B before it was terminated at the Parcel UC1 property boundary (Figure 4-1). In addition, only 44 linear feet of trench segment 03-D16-00-1D was removed because the remaining 119 linear feet identified in the Design Plan was not found after several excavation attempts.

Approximately 225 linear feet of pipe and Manhole MH545 were removed from SU168 during excavation activities. Pipe from trench segment 03-D16-00-1B was 10-inch-diameter and pipe from -8C was 8-inch-diameter VCP located at depths ranging from 11 feet to 12 feet bgs (Table 3-2). Pipe excavated from trench segments 03-D16-00-1D and -1H were 24-inch-diameter concrete located at depths ranging from 8 feet to 18 feet bgs. The majority of the pipe disintegrated upon removal and was transferred along with the excavated soil to RSY2 for processing. The remainder of the pipe and MH545 were crushed and placed in LLRW bins for disposal by the DON's radiological waste contractor (Table 3-8). An insufficient volume of sediment was found in the SU168 piping during the removal action for sample collection and analysis.

Initially, 18 systematic and 10 biased soil samples were collected from SU168 on May 11, 2010, and submitted to the on-site laboratory for analysis. One soil sample (03-PET-168-01) showed Cs-137 activity above the release limit at 0.11864 pCi/g. Figure 4-2 depicts the approximate location of the contaminated soil sample in SU168. Based on this analytical result, approximately 2.5 cubic yards of soil was remediated from trench segment 03-D16-00-1H. The remediated soil was placed in LLRW bin BFLU000353G9 for disposal on May 20, 2010 (Table 3-7). Following remediation, three postremediation samples were collected and analyzed. No radioactivity above the release criteria was identified for any ROC. The on-site and off-site laboratory sample analytical reports are presented in Attachment 2, and the off-site laboratory quality assurance data are included in Attachment 6 of the SU168 SUPR provided in Appendix E.

4.10.2 SU168 Piping Remaining in Place

No known storm drain or sanitary sewer piping associated with SU168 remained in place on Parcel UC1 following the completion of the removal action.

4.10.3 SU168 FSS Summary

On May 26, 2010, 18 systematic FSS soil samples were collected from SU168 and submitted to the on-site laboratory for analysis following the collection of gamma scan readings and direct

measurements. No readings or measurements were found above the investigation levels, and no radioactivity above the release criteria was identified in the FSS soil samples for any ROC. The trench unit gamma scan ranges and direct measurements were presented in Attachment 1 of the SU168 SUPR (Appendix E), and the approximate locations of the FSS soil samples are depicted on Figure 4-1.

For the FSS, SU168 was defined as the sum of the trench unit and the backfill material composed of both radiologically processed and released excavated soil and a volume of imported fill. The average net residual radioactivity concentrations for the backfill material were 0.049 pCi/g for Cs-137, 0.133 pCi/g for Sr-90, and 0.284 pCi/g for Ra-226. The average net trench unit concentrations of residual radioactivity were 0.037 pCi/g for Cs-137, 0.256 pCi/g for Sr-90, and -0.076 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling using the larger of the MDL or reported activity resulted in a net residual dose of 4.569 mrem/y with an increased cancer risk of 7.395×10^{-5} for the backfill material and 0.8457 mrem/y with an increased cancer risk of 1.095×10^{-5} for the trench unit. The modeling parameters and results were provided in the SU168 SUPR (Appendix E).

The results of the modeling efforts determined that the potential SU168 dose due to activity concentrations greater than or equal to the MDL were 4.569 mrem/y with a net increase in cancer risk of 7.395×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU168 SUPR (Appendix E).

4.10.4 SU168 Backfill Activities

The RASO concurred with backfilling SU168 on July 13, 2010, and backfilling activities began the same day (Table 3-1). Backfill activities were initiated using ES Unit 276 followed by ES Unit 251 and a volume of imported fill.

Compaction testing was performed over several days with the addition of imported fill following each test. In total, about 1,291 cubic yards of soil was backfilled into SU168. Final soil compaction testing was performed and certification achieved for SU168 on July 23, 2010. Site restoration activities, including a discussion of backfill compaction, are presented in Section 7.0 of this RACR.

4.11 TRENCH SURVEY UNIT 171

Trench Survey Unit 171 (SU171) is located at the juncture of Crisp Road and 6th Avenue on the western end of Spear Avenue (Figure 4-1). Physically separated in two locations, SU171 consists of two storm drain lines identified as 03-D16-00-1A and -1E, and two sanitary sewer lines identified as 03-D16-00-1C and -8B (Table 3-2). Although not identified in the Design

Plan (TtEC 2008c), approximately 130 linear feet of trench segment 03-D16-00-8B was found during the excavation of trench segments 03-D16-00-1A and -1C. Trench segment 03-D16-00-1E is physically located to the southwest of the main body of SU171. It connects to SU164 on the east and terminates at the Parcel UC1 property boundary on the west. The main body of SU171 ties into SU167 on the northwest, SU168 on the west, and SU133 on the east.

Following the completion of the excavation activities, SU171 had an exposed surface area of 761 m² and was 363 linear feet in length (Table 3-1). As shown in Table 3-2, the depth of the excavated trench survey unit ranged from 3 feet to 16 feet bgs.

4.11.1 SU171 Removal Action Activities

SU171 excavation activities were initiated on April 5, 2010, in trench segment 03-D16-00-1A (Figure 4-1). A total of 57 truckloads (about 684 cubic yards) were excavated from SU171 and transferred to RSY2 for processing (Tables 3-3 and 3-4). During excavation, a 10-inch-diameter gas line, a 16-inch-diameter water line, and an 8-inch-diameter saltwater line were found crossing trench segment 03-D16-00-1A and an electrical line conduit encased in concrete was discovered traversing trench segment 03-D16-00-8B. A concrete raceway, electrical conduit encased in concrete, and a gas line were found crossing trench segment 03-D16-00-1C during excavation.

Approximately 310 linear feet of pipe was removed from SU171 during excavation activities. Storm drain trench segments 06-D16-00-1A and -1E contained 10-inch-diameter concrete pipe and 15-inch-diameter VCP, respectively, located at depths ranging from 6 feet to 8 feet bgs (Table 3-2). Sanitary sewer trench segment 03-D16-00-1C contained 24-inch-diameter concrete pipe at a depth of 14 feet bgs and -8B contained 8-inch-diameter VCP at a depth of 2 feet bgs. The majority of the pipe disintegrated upon removal and was transferred along with the excavated soil to RSY2 for processing. The remainder of the pipe was placed in LLRW bins for disposal by the DON's radiological waste contractor (Table 3-8).

Sufficient sediment for sample collection and analysis was found in pipe excavated from SU171. One sediment sample showed the presence of Cs-137 activity above the release criteria (Table 3-5). Copies of the sediment sample analytical results are provided in Appendix C.

Manhole MH547 was removed from SU171 on April 6, 2010, and was the only manhole associated with this trench survey unit. Insufficient sediment was available for sample collection and analysis. Manhole MH547 was crushed and placed in LLRW bin GFLU001189G12 on April 9, 2010 (Table 3-8).

Initially, 18 systematic soil samples were collected from SU171 on May 28, 2010 and submitted to the on-site laboratory for analysis (Table 3-1). One soil sample, identified as 03-PET-171-12,

showed Cs-137 activity above the release limit at 0.11564 pCi/g. Because Cs-137 activity greater than the release criteria was identified in this sample, additional analysis for isotopic plutonium was performed in accordance with the Work Plan and the SAP (TtEC 2008f). None of the isotopic plutonium results exceeded the release criteria. The approximate location of each contaminated soil sample is depicted on Figure 4-2. Based on the contaminated soil sample, an estimated 3 cubic yards of soil was remediated. The remediated soil was placed in LLRW bin BFLU000396G13 for disposal (Table 3-7), and three postremediation samples were collected and submitted for analysis. No contamination above the release criteria was identified in the three postremediation samples.

Following an evaluation of the postremediation sample analytical results, 18 systematic soil samples were collected on June 9, 2010, and submitted to the on-site laboratory for analysis with no radioactivity identified above the release criteria for any ROC. However, a small unexcavated section of trench segment 03-D16-00-1E that connects to SU164 was found and added to SU171. The discovery of this section of trench resulted in its inclusion in SU171. The on-site and off-site laboratory analytical reports for each SU171 soil sample are presented in Attachment 2, and the off-site laboratory quality assurance data are included in Attachment 3 of the SU171 SUPR (Appendix E).

4.11.2 SU171 Piping Remaining in Place

No known storm drain or sanitary sewer piping associated with SU171 remained in place on Parcel UC1 following the completion of the removal action.

4.11.3 SU171 FSS Summary

Eighteen systematic FSS soil samples were collected from SU171 (including trench segment 06-D16-00-1E) on June 15, 2010, and submitted to the on-site laboratory for analysis following the collection of gamma scan readings and direct measurements. No readings or measurements were found above the investigation levels, and no radioactivity above the release criteria was identified in the FSS soil samples for any ROC. The trench unit gamma scan ranges and direct measurements were presented in Attachment 1 of the SU171 SUPR (Appendix E), and the approximate locations of the FSS soil samples are depicted on Figure 4-1.

For the FSS, SU171 was defined as the sum of the trench unit and the backfill material composed of a volume of imported fill (Table 3-1). The average net residual activity concentrations for the backfill material were 0.053 pCi/g for Cs-137, 0.070 pCi/g for Sr-90, and 0.373 pCi/g for Ra-226. The trench unit average net residual radioactivity concentrations were 0.041 pCi/g for Cs-137, 0.256 pCi/g for Sr-90, and -0.063 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling using the larger of the MDL or reported activity resulted in a net residual dose of 5.702 mrem/y with an increased cancer risk of 9.317×10^{-5} for the backfill material and 0.869 mrem/y with an increased cancer risk of 1.128×10^{-5} for the trench unit. Copies of the modeling parameters and results are provided in the SU171 SUPR (Appendix E).

The results of the modeling efforts determined that the potential SU171 dose due to activity concentrations greater than or equal to the MDL were 5.702 mrem/y with a net increase in cancer risk of 9.317×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU171 SUPR (Appendix E).

4.11.4 SU171 Backfill Activities

The RASO concurred with backfilling SU171 on July 14, 2010. Backfilling activities were initiated on July 17, 2010 using imported fill and were completed on July 23, 2010. Approximately 640 cubic yards of import material was used to backfill SU171. Site restoration activities are described in Section 7.0.

5.0 PARCEL UC2 REMOVAL ACTION

The trench survey units located in Parcel UC2 include Trench Survey Units 136, 137, 138, 141, 142, 143, 144, 145, and 149 (Figure 5-1). The SUPRs for each of the Parcel UC2 trench survey units are provided in Appendix F. Although there are no buildings located within Parcel UC2, an asphalt parking lot associated with Building 101 is located east of the SFRA property along Robinson Street and within the Parcel UC2 property boundary. This area is discussed in Section 5.10. The following sections summarize each trench survey unit resulting from the Parcel UC2 storm drain and sanitary sewer removal action activities as well as the storm drain and sanitary sewer piping remaining in place at the request of the City of San Francisco to support the artists occupying Building 101 along Robinson Street.

5.1 TRENCH SURVEY UNIT 136

Trench Survey Unit 136 (SU136) is located at the east end of Parcel UC2 and just west of Parcel C (Figure 5-1). Beginning in Lockwood Street at the Parcel C property boundary, SU136 extends southeast into Fisher Avenue, intersects with Robinson Street, and continues through Manhole MH256 where it extends southwest along Fisher Avenue. At its east end, SU136 connects to Survey Unit 137.

SU136 consists of three sanitary sewer trench segments identified as 02-C15-00-1A, -1B, and -1C (Figures 3-2 and 5-1). Although approximately 95 linear feet of trench segment 02-C15-00-1C is associated with SU136, the majority of this trench segment is located in Survey Unit 137. A 12-inch-diameter fresh water line and an 8-inch-diameter saltwater line cross trench segment 02-C15-00-1C at its east end. A 5-feet-wide concrete beam was identified during the excavation activities crossing trench segment 02-C15-00-1C and running parallel to the fresh and saltwater pipelines. In addition, an 8-inch-diameter gas line and a 6-inch-diameter water line crossed trench segment 02-C15-00-1C near the intersection of Robinson Street and Fisher Avenue. These subsurface features were not removed during the excavation activities.

Subsurface rock formations were encountered in trench segment 02-C15-00-1A where excavation activities were initiated at the Parcel C boundary and in trench segment 02-C15-00-1C along Fisher Avenue (Photograph 5-1). These rock formations limited the lateral extent of the excavations and resulted in near-vertical trench lines. Following the completion of excavation, SU136 exhibited a total exposed surface area of 695 m² and was approximately 189 linear feet in length. The depth of SU136 ranged from 15 feet to 21 feet bgs as shown in Table 3-2. Groundwater was encountered at approximately 15 feet bgs.

5.1.1 SU136 Removal Action Activities

Excavation activities for SU136 began on April 22, 2009 with trench segment 02-C15-00-1A as identified in the Design Plan (TtEC 2008c) and were completed on April 29, 2009 in trench segment 02-C15-00-1C (Table 3-1). A total of 150 truckloads (about 1,318 cubic yards) of soil were excavated from SU136 and transferred to RSY2 for processing (Tables 3-3 and 3-4).

Based on field measurements, approximately 178 linear feet of pipe was removed from SU136. The sanitary sewer pipe in trench segment 02-C15-00-1B was 12-inch-diameter concrete located at depths ranging from 18 feet to 20 feet bgs (Table 3-2). This trench segment extends southeast from Manhole MH256 where it was terminated at the Parcel C property boundary. Trench segments 02-C15-00-1A and -1B were 21-inch-diameter concrete pipe located at depths ranging from 13 feet to 19 feet bgs. The majority of the pipe disintegrated upon removal and was transferred along with the excavated soil to RSY2 for processing. As shown in Table 3-8, the remainder of the pipe was placed in LLRW bins for disposal by the DON's LLRW contractor.

Insufficient sediment was found during the excavation activities in the majority of SU136 pipe to submit to the on-site laboratory for analysis. However, the results from three sediment samples identified the presence of Ra-226 contamination (Table 3-5). The laboratory analytical reports for the sediment samples are included in Appendix C.

Manhole MH256 was located in the intersection of Fisher Avenue and Robinson Street prior to its excavation on April 28, 2009 (Figure 5-1). An inadequate quantity of sediment was available from this manhole for sample collection and analysis. Debris from MH256 was placed in LLRW bins BKRU025441G2 and GFLU001043G10 for disposal (Table 3-8).

Initially, 18 soil samples were collected from SU136 on May 12, 2009 (Table 3-1). Laboratory analytical results indicated the presence of Ra-226 activity above the release limit in 6 of the 18 soil samples, ranging from 1.5066 pCi/g to 2.4008 pCi/g. Based on these analytical results, approximately 41 cubic yards of soil was removed from SU136 followed by the collection and analysis of 12 postremediation soil samples (Table 3-7). Figure 5-2 depicts the approximate locations of each of the contaminated soil samples associated with SU136.

Of the 12 postremediation soil samples analyzed by gamma spectroscopy, 6 showed Ra-226 activity above the release limit ranging from 1.5977 pCi/g to 3.3780 pCi/g. Approximately 32 cubic yards of soil was placed in LLRW bins for disposal on May 26, 2009. Ten postremediation soil samples were collected and submitted to the on-site laboratory for analysis. Four of the 10 postremediation samples indicated the presence of Ra-226 activity above the release limit ranging from 1.6393 pCi/g to 2.4145 pCi/g.

Remediation activities were performed on June 9, 2009. Approximately 13 cubic yards of soil was placed in LLRW bins for disposal by the DON's radiological waste contractor. Following the

remediation effort, seven postremediation samples were collected and analyzed. Two of the seven soil samples showed Ra-226 activity above the release limit at 1.6512 pCi/g and 1.7198 pCi/g. Based on these results, about 58 cubic yards of soil was remediated from SU136 followed by the collection and analysis of three postremediation samples on June 12, 2009. No activity above the release criteria was identified in the postremediation samples for any ROC.

On June 17, 2009, 18 systematic soil samples were collected from SU136 and analyzed by the on-site laboratory. Only one soil sample (02-UCT-136-56) showed Ra-226 activity above the release limit at 1.6445 pCi/g. Based on this result, approximately 16 cubic yards of soil was removed from trench segment 02-C15-00-1A on June 26, 2009. Three postremediation samples were collected for analysis following the remediation activities. Two of the three postremediation soil samples showed Ra-226 activity above the release limit at 1.5561 pCi/g and 1.8095 pCi/g (Figure 5-2).

Remediation was performed on July 2, 2009 with the removal of about 4 cubic yards of soil from trench segment 02-C15-00-1A. Three postremediation samples were collected and analyzed following the remediation activities. No radioactivity above the release criteria was identified in these soil samples and 18 systematic sample locations were plotted in SU136. The 18 systematic soil samples were collected on July 9, 2009 and analyzed by gamma spectroscopy. Only one systematic soil sample (02-UCT-136-89) indicated the presence of Ra-226 activity above the release limit at 1.6063 pCi/g. Approximately 7 cubic yards of soil was removed from trench segment 02-C15-00-1A on July 21, 2009. Two postremediation samples were collected and analyzed following the remediation activities. No radioactivity above the release criteria was identified in either of the two postremediation samples for any ROC.

Eighteen systematic locations were plotted in SU136, and soil samples were collected and analyzed on July 27, 2009. Only one systematic soil sample (02-UCT-136-103) showed Ra-226 activity above the release limit at 1.6987 pCi/g. Based on this result, about 16 cubic yards of soil was remediated from trench segment 02-C15-00-1B. The remediated soil was placed in an LLRW bin for disposal (Table 3-7). Following remediation, two samples were collected and analyzed. No activity above the release criteria was identified in either of the two postremediation samples for any ROC. However, to ensure that radioactivity above the release criteria had been removed from SU136, an additional 18 cubic yards of soil was removed and placed in LLRW bins for disposal by the DON's radiological waste contractor.

In total, 114 investigative soil samples were collected from SU136 and analyzed by the on-site laboratory during the removal action, and approximately 203 cubic yards of soil was placed in LLRW bins for disposal (Table 3-7). Figure 5-2 shows the approximate locations of each of the contaminated soil samples identified in SU136. The on-site and off-site laboratory analytical reports for SU136 are presented in Attachment 2, and the off-site laboratory quality assurance data are included in Attachment 6 of the SU136 SUPR provided in Appendix F.

5.1.2 SU136 Piping Remaining in Place

No known storm drain or sanitary sewer piping associated with SU136 remained in place on Parcel UC2 following the completion of the removal action.

5.1.3 SU136 FSS Summary

On August 18, 2009, 18 systematic FSS soil samples were collected and submitted to the on-site laboratory for analysis following the collection of gamma scan readings and direct measurements. Readings were found above the investigation levels during the performance of the gamma scans, but not in the direct measurements. No radioactivity above the release criteria was identified in the FSS soil samples for any ROC. The trench unit gamma scan ranges and direct measurements were presented in Attachment 1 of the SU136 SUPR provided in Appendix F. The locations of the FSS soil samples are depicted on Figure 5-1.

For the FSS, SU136 was defined as the sum of the trench unit and the backfill material composed of both radiologically processed and released excavated soil and a volume of imported fill. The average net residual radioactivity concentrations for the backfill material were 0.046 pCi/g for Cs-137, 0.183 pCi/g for Sr-90, and 0.243 pCi/g for Ra-226. The trench unit average net residual radioactivity concentrations were 0.043 pCi/g for Cs-137, 0.145 pCi/g for Sr-90, and 0.277 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling using the larger of the MDL or reported activity resulted in a net residual dose of 3.946 mrem/y with an increased cancer risk of 6.373×10^{-5} for the backfill material and 4.301 mrem/y with an increased cancer risk of 7.008×10^{-5} for the trench unit. The dose and risk modeling results were documented in the SU136 SUPR (Appendix F).

The results of the modeling efforts determined that the potential SU136 dose due to activity concentrations greater than or equal to the MDL were 4.301 mrem/y with a net increase in cancer risk of 7.008×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU136 SUPR (Appendix F).

5.1.4 SU136 Backfill Activities

On September 8, 2009, the RASO concurred with backfilling SU136, and field activities commenced the following day (Table 3-1). ES Units 193, 194, 196, 197, 202, and 203, as well as a volume of imported fill were selected for use as backfill material in SU136 (Table 3-4).

Backfill activities were initiated in SU136 using ES Unit 194 followed by ES Units 193, 196, 197, 202, and 203. Following backfilling activities using the ES stockpiles, imported fill was placed in SU136. Compaction testing was performed on September 30, 2009 and additional imported fill was backfilled into the trench. Final compaction was achieved on October 9, 2009.

An estimated 1,714 cubic yards of soil was backfilled into SU136. Compaction and site restoration activities are described in Section 7.0. Compaction test results are provided in Appendix I.

5.2 TRENCH SURVEY UNIT 137

Trench Survey Unit 137 (SU137) is located in Parcel UC2 on the east side of Fisher Avenue (Figure 5-1). It is connected to SU136 on the north and Trench Survey Unit 138 on the south. SU137 runs parallel to Trench Survey Unit 145 within Fisher Avenue, but ties into this trench survey unit at Manhole MH257.

SU137 is comprised of three sanitary sewer trench segments identified as 02-C15-00-1C, -1D, and -1E (Figures 3-2 and 5-1). A subsurface rock formation was encountered during the removal action at the south end of SU137 where it connects to Survey Unit 138. Upon the completion of excavation activities, SU137 displayed a total exposed surface area of 896 m² and was 234 linear feet in length (Table 3-1). The total depth of the trench survey unit ranged from 15 feet to 18 feet bgs as shown in Table 3-2. Groundwater was encountered in SU137 at 12 feet to 15 feet bgs.

5.2.1 SU137 Removal Action Activities

SU137 excavation activities were initiated on April 30, 2009 in trench segment 02-C15-00-1C and were completed on August 28, 2009. No previously unidentified trench segments were discovered during the excavation of SU137. A total of 183 truckloads (about 944 cubic yards) of soil were excavated from SU137 and transferred to RSY2 for processing (Tables 3-3 and 3-4).

As measured in the field, about 237 linear feet of pipe was removed during the SU137 excavation activities. The sanitary sewer pipe in trench segments 02-C15-00-1C and -1E was 21-inch-diameter concrete located at depths ranging from 13 to 16 feet bgs (Table 3-2). Trench segment 02-C15-00-1C extended southwest through Manhole MH257 where it transitioned to trench segment 02-C15-00-1E (Figure 5-1). Trench segment 02-C15-00-1D extended west from Manhole MH257 for approximately 7 linear feet where it transected Survey Unit 145. Trench segment 02-C15-00-1D was a 12-inch-diameter concrete sanitary sewer line ranging in depth from 14 to 17 feet bgs (Table 3-2). The majority of the pipe excavated from SU138 disintegrated upon removal, and the debris was transferred along with the excavated soil to RSY2 for processing. The remainder of the pipe was placed in LLRW bins for disposal by the DON's radiological waste contractor (Table 3-8).

Sufficient sediment was found in excavated pipe for sample collection and analysis, as discussed in the SU137 SUPR (Appendix F). The majority of the sediment samples analyzed did not indicate the presence of radioactivity above the release criteria for any ROC. However, some

sediment samples showed the presence of Cs-137 and Ra-226 contamination (Table 3-5). Copies of the laboratory analytical reports are provided in Appendix C.

Manhole MH257 was located at the juncture of trench segments 02-C15-00-1C, -1D, and -1E prior to its excavation on May 11, 2009. Insufficient sediment was available in this manhole for sample collection. MH257 was crushed and the debris placed in LLRW bin GFLU001225G2 on May 14, 2009 for disposal (Table 3-8).

5.2.2 SU137 Piping Remaining in Place

No known storm drain or sanitary sewer piping associated with SU137 remained in place on Parcel UC2 following the completion of the removal action.

5.2.3 SU137 FSS Summary

On June 5, 2009, 18 systematic FSS soil samples were collected from SU137 and submitted to the on-site laboratory for analysis following the collection of gamma scan readings and direct measurements (Table 3-1). Some scan readings were found above the investigation levels, but no elevated direct measurements were identified. The scan ranges and direct measurements were provided in Attachment 1 of the SU137 SUPR (Appendix F). In addition, no radioactivity above the release criteria was identified in the FSS soil samples for any ROC. The on-site and off-site laboratory analytical reports for each FSS soil sample are presented in Attachment 2, and the off-site laboratory quality assurance data are included in Attachment 6 of the SU137 SUPR (Appendix F). Figure 5-1 depicts the locations of the FSS sample collection locations in SU137.

For the FSS, SU137 was defined as the sum of the trench unit and the backfill material composed of both radiologically processed and released excavated soil and a volume of imported fill. The average net residual radioactivity concentrations for backfill material were 0.047 pCi/g for Cs-137, 0.144 pCi/g for Sr-90, and 0.309 pCi/g for Ra-226. The trench unit average net residual radioactivity concentrations were 0.045 pCi/g for Cs-137, 0.250 pCi/g for Sr-90, and 0.131 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling using the larger of the MDL or reported activity resulted in a net residual dose of 5.576 mrem/y with an increased cancer risk of 8.821×10^{-5} for the backfill material and 3.099 mrem/y with an increased cancer risk of 4.687×10^{-5} for the trench unit. The modeling parameters and results were documented in the SU137 SUPR (Appendix F).

The results of the modeling efforts determined that the potential SU137 dose due to activity concentrations greater than or equal to the MDL were 5.576 mrem/y with a net increase in cancer risk of 8.821×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU137 SUPR (Appendix F).

5.2.4 SU137 Backfill Activities

The RASO concurred with backfilling SU137 on August 28, 2009 and backfill activities were initiated on September 28, 2009 (Table 3-1). Backfill for SU137 was composed of soil excavated from ES Units 191, 192, 195, and 201 as well as imported fill (Tables 3-3 and 3-4).

Following the placement of the ES units, backfill activities continued in SU137 with the addition of the imported fill. Additional imported fill was placed in the trench following compaction testing on September 30, 2009. Final compaction was achieved on October 12, 2009. An estimated 1,228 cubic yards of soil, including excavated soil and imported fill, was backfilled into SU137 and compacted. Soil compaction and site restoration activities are described in Section 7.0.

5.3 TRENCH SURVEY UNIT 138

Trench Survey Unit 138 (SU138) is located in Parcel UC2 on the east side of Fisher Avenue (Figure 5-1). It is connected to SU137 on the north and Trench Survey Unit 144 on the south. SU138 runs parallel to Trench Unit 144 in Fisher Avenue.

SU138 is comprised of one sanitary sewer trench segment identified as 02-C15-00-1E. This trench segment is a continuation of the line excavated from SU137 to the north (Figures 3-2 and 5-1). A subsurface rock formation was encountered during the removal activities just south of a 5-foot-wide concrete beam embedded in Fisher Avenue. Excavation activities within this rock formation resulted in a near-vertical trench (Photograph 5-1). The total exposed surface area for SU138 was 869 m² upon completion, and was 235 linear feet in length (Table 3-1). The depth of the trench survey unit ranged from 16 feet to 17 feet bgs as shown in Table 3-2. Groundwater was encountered in SU138 at 10 feet to 12 feet bgs.

5.3.1 SU138 Removal Action Activities

Excavation activities for SU138 were performed between May 12 and May 15, 2009 in trench segment 02-C15-00-1E. A total of 122 truckloads (approximately 939 cubic yards) of soil were excavated from SU138 and transferred to RSY2 for processing (Tables 3-3 and 3-4).

Based on field measurements, approximately 235 linear feet of pipe was removed from SU138. The sanitary sewer pipe removed from trench segment 02-C15-00-1E was 21-inch-diameter concrete located at depths of 14 feet to 15 feet bgs (Table 3-2). The majority of the pipe disintegrated upon removal and was transferred along with the excavated soil to RSY2 for processing. The remainder of the pipe was placed in LLRW bins for disposal by the DON's radiological waste contractor (Table 3-8).

Sufficient sediment was found in excavated pipe for sample collection and analysis, as discussed in the SU138 SUPR (Appendix F). The majority of the sediment samples analyzed did not indicate the presence of radioactivity above the release criteria for any ROC; however, Cs-137 activity above the release limit was found in some sediment samples (Table 3-5). The laboratory analytical reports for the sediment samples are provided in Appendix C.

Manhole MH254 was excavated from SU138 on May 13, 2009. Adequate sediment was available in this manhole for sample collection and analysis (Figure 5-1). Ra-226 activity was identified in the sediment sample above the release limit (Table 3-5). Debris from crushing MH254 was placed in LLRW bins GFLU001081G10 and MHFU001646G8 on May 14, 2009 (Table 3-8).

5.3.2 SU138 Piping Remaining in Place

No known storm drain or sanitary sewer piping associated with SU138 remained in place on Parcel UC2 following the completion of the removal action.

5.3.3 SU138 FSS Summary

A total of 18 systematic FSS soil samples were collected from SU138 on June 8, 2009 and submitted to the on-site laboratory for analysis following the collection of gamma scan readings and direct measurements (Table 3-1). Some scan readings were found above the investigation levels, but no elevated direct measurements were identified. The trench unit gamma scan ranges and direct measurements were presented in Attachment 1 of the SU138 SUPR (Appendix F). In addition, no radioactivity above the release criteria was identified in the FSS soil samples for any ROC. Figure 5-1 depicts the locations of the FSS soil samples. The on-site and off-site laboratory analytical reports for each FSS soil sample are presented in Attachment 2, and the off-site laboratory quality assurance data are included in Attachment 6 of the SU138 SUPR provided in Appendix F.

For the FSS, SU138 was defined as the sum of the trench unit and the backfill material composed of both radiologically processed and released excavated soil and a volume of imported fill. The average net residual radioactivity concentrations for material used as backfill were 0.042 pCi/g for Cs-137, 0.194 pCi/g for Sr-90, and 0.197 pCi/g for Ra-226. The trench unit average net concentrations of residual radioactivity were 0.043 pCi/g for Cs-137, 0.205 pCi/g for Sr-90, and 0.120 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling using the larger of the MDL or reported activity resulted in a net residual dose of 3.868 mrem/y with an increased cancer risk of 6.027×10^{-5} for the backfill material and 2.696 mrem/y with an increased cancer risk of 4.113×10^{-5} for the trench unit. The modeling parameters and results for SU138 were documented in the SUPR (Appendix F).

The results of the modeling efforts determined that the potential SU138 dose due to activity concentrations greater than or equal to the MDL were 3.868 mrem/y with a net increase in cancer risk of 6.027×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU138 SUPR (Appendix F).

5.3.4 SU138 Backfill Activities

The RASO concurred with backfilling SU138 on July 29, 2009 (Table 3-1). The stockpiles selected for backfill material included ES Units 207, 208, and 209, as well as imported fill. Backfill activities were initiated on August 5, 2009 with ES Unit 209.

Soil compaction testing was performed for SU138 on August 12, 2009. Based on the compaction testing results, imported fill was added to the trench and additional compaction testing was performed on September 11, 2009. Additional imported fill was placed in SU138 and final compaction was achieved on October 12, 2009. Soil compaction and site restoration activities are described in Section 7.0.

5.4 TRENCH SURVEY UNIT 141

Trench Survey Unit 141 (SU141) is located midway along Parcel UC2 on the southeast side of Fisher Avenue (Figure 5-1). It connects to SU138 on the northeast and to Trench Survey Unit 142 on the southwest. A small section of SU141 ties into Survey Unit 144 on the west. SU141 terminates on the southeast at the Parcel UC2 boundary.

A small concrete beam was found during the excavation activities at the south end of the survey unit. In addition, a subsurface rock formation extended the full length of the survey unit (Photograph 5-1). This rock formation limited the lateral extent of the excavations and resulted in near-vertical trenches.

SU141 consists of five trench segments that were identified in the Design Plan (TtEC 2008c). Two of the trench segments, designated as 02-C15-00-1E and -1F, were sanitary sewer lines, and three of the trench segments (02-C15-00-2F, -2G, and -2H) were storm drain lines (Figures 3-2 and 5-1). Following the completion of excavation activities, SU141 exhibited an exposed surface area of 827 m² and was 302 linear feet in length (Table 3-1). The depth of the excavated trench ranged from 6 feet to 16 feet bgs (Table 3-2). Groundwater was encountered approximately 7 feet to 8 feet bgs.

5.4.1 SU141 Removal Action Activities

SU141 excavation activities were initiated on May 27, 2009 in trench segment 02-C15-00-1E and were completed on June 2, 2009 in trench segment 02-C15-00-2G. A total of 109 truckloads

(approximately 908 cubic yards) of soil were excavated from SU141 and transferred to RSY2 for processing (Tables 3-3 and 3-4).

As measured in the field, about 283 linear feet of pipe was removed during the SU141 excavation activities. The two sanitary sewer lines identified as 02-C15-00-1E and -1F were 21-inch-diameter concrete located at depths between 13 feet and 14 feet bgs (Table 3-2). Storm drain lines 02-C15-00-2F, -2G, and -2H were 18-inch-diameter, 12-inch-diameter, and 15-inch-diameter concrete pipe ranging in depth from 5 feet to 15 feet bgs. The majority of piping removed from SU141 disintegrated upon removal and the debris was transferred along with the excavated soil to RSY2 for processing. As shown in Table 3-8, the remainder of the pipe was placed in LLRW bins for disposal by the DON's LLRW contractor.

Sufficient sediment was found in excavated pipe from SU141 for sample collection and analysis. The majority of the sediment samples analyzed did not indicate the presence of radioactivity above the release criteria for any ROC; however, Cs-137 contamination was identified in a number of pipe sediment samples (Table 3-5). The laboratory analytical reports are provided in Appendix C.

Two manholes, identified as MH259 and MH260, were excavated from SU141 during the removal action and were placed in LLRW bins for disposal on June 1, 2009 (Table 3-8). Only Manhole MH259 contained adequate sediment for sample collection and analysis. No radioactivity above the release criteria was identified for any ROC in MH259 sediment.

5.4.2 SU141 Piping Remaining in Place

No known storm drain or sanitary sewer piping associated with SU141 remained in place on Parcel UC2 following the completion of the removal action.

5.4.3 SU141 FSS Summary

The SU141 18 systematic FSS soil samples were collected and submitted to the on-site laboratory for analysis on June 22, 2009 following the collection of gamma scan readings and direct measurements (Table 3-1). Some scan readings were found above the investigation levels, although no elevated direct measurements were identified. The FSS soil sample analytical results did not indicate the presence of activity above the release criteria for any ROC. The trench unit gamma scan ranges and direct measurements were presented in Attachment 1 of the SU141 SUPR provided in Appendix F. Figure 5-1 depicts the locations of the FSS soil samples in SU141. The on-site and off-site laboratory analytical reports for each FSS soil sample were presented in Attachment 2 and the off-site laboratory quality assurance data are included in Attachment 6 of the SU141 SUPR (Appendix F).

For the FSS, SU141 was defined as the sum of the trench unit and the backfill material composed of both radiologically processed and released excavated soil and a volume of imported fill. The average net residual radioactivity concentrations for the backfill material were 0.048 pCi/g for Cs-137, 0.161 pCi/g for Sr-90, and 0.274 pCi/g for Ra-226. The trench unit average net residual radioactivity concentrations were 0.043 pCi/g for Cs-137, 0.260 pCi/g for Sr-90, and 0.074 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling for SU141 using the larger of the MDL or reported activity resulted in a net residual dose of 4.816 mrem/y with an increased cancer risk of 7.658×10^{-5} for the backfill material and 2.085 mrem/y with an increased cancer risk of 3.081×10^{-5} for the trench unit. The parameters and results of the dose and risk modeling effort were documented in the SU141 SUPR provided in Appendix F.

The results of the modeling efforts determined that the potential SU141 dose due to activity concentrations greater than or equal to the MDL were 4.816 mrem/y with an increased cancer risk of 7.658×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU141 SUPR (Appendix F).

5.4.4 SU141 Backfill Activities

The RASO concurred with backfilling SU141 on August 11, 2009 and backfill activities were initiated the same day. The excavated soil stockpiles selected for use as backfill material in SU141 included ES Units 211, 214, and 215 (Table 3-1).

Backfill activities began with ES Unit 214, followed by ES Units 211 and 215. Soil compaction testing was performed on August 17, 2009 followed by the addition of imported fill. Compaction testing was again performed on September 9, September 11, and September 18, 2009. Additional imported fill was placed in SU141 after each compaction test. Final soil compaction testing was performed and certification achieved on October 12, 2009. An estimated 1,180 cubic yards of soil was backfilled into SU141. Soil compaction and site restoration activities are described in Section 7.0.

5.5 TRENCH SURVEY UNIT 142

Trench Survey Unit 142 (SU142) is located in Parcel UC2 on the east side of Fisher Avenue (Figure 5-1). It is connected to SU141 on the north and Trench Survey Unit 149 on the south. SU142 runs parallel to Trench Survey Unit 143 located on the west side of Fisher Avenue.

SU142 is comprised of a single sanitary sewer trench segment identified as 02-C15-00-1F, which is a continuation of the same trench segment in SU141 to the north (Figures 3-2 and 5-1). A subsurface rock formation was encountered during the removal action in the north half of the

trench unit that was contiguous with the bedrock found in SU141 (Photograph 5-1). At the completion of the excavation activities, SU142 had an exposed surface area of 951 m² and an overall length of 269 linear feet (Table 3-1). The total depth of the trench survey unit was 16 feet bgs (Table 3-2). Groundwater was encountered in SU142 at approximately 7 feet bgs.

5.5.1 SU142 Removal Action Activities

Excavation activities for SU142 were initiated on June 4, 2009 and were completed on June 9, 2009 (Table 3-1). No previously unidentified trench segments were discovered during the excavation of SU142. A total of 116 truckloads (about 1,116 cubic yards) of soil were excavated from SU142 and transferred to RSY2 for processing (Tables 3-3 and 3-4).

As measured in the field, about 269 linear feet of pipe was removed during the SU142 excavation activities. The trench segment 02-C15-00-1F sanitary sewer pipe was 21-inch-diameter concrete located at depths ranging from 13 feet to 14 feet bgs (Table 3-2). The majority of the pipe excavated from SU142 crumbled upon removal and the debris was transferred along with the excavated soil to RSY2 for processing. As shown in Table 3-8, the remainder of the pipe from this trench segment was placed in LLRW bins for disposal by the DON's LLRW contractor. There were no manholes associated with SU142.

Although the majority of the sanitary sewer pipe removed from SU142 contained an inadequate volume of sediment for sample collection, sufficient sediment was obtained from several pipes and submitted to the on-site laboratory for analysis. The analytical results for two sediment samples showed no radioactivity above the release criteria for any ROC; however, some sediment samples indicated the presence of Cs-137 activity above the release limit (Table 3-5). The sediment sample analytical results are provided in Appendix C.

5.5.2 SU142 Piping Remaining in Place

No known storm drain or sanitary sewer piping associated with SU142 remained in place on Parcel UC2 following the completion of the removal action.

5.5.3 SU142 FSS Summary

The 18 systematic FSS soil samples for SU142 were collected on June 24, 2009 and submitted to the on-site laboratory for analysis following the collection of gamma scan readings and direct measurements. Although some scan readings were found above the investigation levels, no elevated direct measurements were identified. The trench unit gamma scan ranges and direct measurements were presented in Attachment 1 of the SU142 FSS (Appendix F). In addition, no radioactivity above the release criteria were identified in the FSS soil samples for any ROC. The locations of the FSS soil samples are depicted on Figure 5-1. The on-site and off-site laboratory analytical reports for each FSS soil sample are presented in Attachment 2, and the off-site

laboratory quality assurance data are included in Attachment 6 of the SU142 SUPR provided in Appendix F.

For the FSS, SU142 was defined as the sum of the trench unit and the backfill material composed of radiologically processed and released excavated soil and a volume of imported fill (Table 3-1). The average net residual radioactivity concentrations of material used as backfill were 0.050 pCi/g for Cs-137, 0.132 pCi/g for Sr-90, and 0.317 pCi/g for Ra-226. The trench unit average net residual radioactivity concentrations were 0.047 pCi/g for Cs-137, 0.265 pCi/g for Sr-90, and 0.072 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling for SU142 using the larger of the MDL or reported activity resulted in a net residual dose of 5.896 mrem/y with an increased risk of cancer of 9.278×10^{-5} for the backfill material and 2.315 mrem/y with an increased cancer risk of 3.367×10^{-5} for the trench unit. The dose and risk modeling parameters and results were documented in the SU142 SUPR (Appendix F).

The results of the modeling efforts determined that the potential SU142 dose due to activity concentrations greater than or equal to the MDL were 5.896 mrem/y with a net increase in cancer risk of 9.278×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU142 SUPR (Appendix F).

5.5.4 SU142 Backfill Activities

The RASO concurred with backfilling SU142 on August 26, 2009 and backfilling activities were initiated the following day. ES Units 216 and 217, as well as a quantity of imported fill, were selected as the SU142 backfill material (Table 3-1).

Backfill operations were initiated using ES Unit 216 followed by ES Unit 217 and additional imported fill. Compaction testing was performed on September 9, 2009 followed by the placement of additional imported fill. Compaction testing was conducted again on September 11 and September 18, 2009. Additional imported fill was placed in SU142 following each compaction test. Compaction certification was achieved on October 12, 2009. An estimated 1,451 cubic yards of soil was backfilled into SU142. Soil compaction and site restoration activities are described in Section 7.0.

5.6 TRENCH SURVEY UNIT 143

Trench Survey Unit 143 (SU143) is located at the south end of Parcel UC2 on the west side of Fisher Avenue (Figure 5-1). It is connected to Trench Survey Unit 144 on the north and extends about 65 linear feet into Parcel UC1 (Spear Avenue) on the south, where it terminates at the existing retaining wall. On the east, SU143 ties into Trench Survey Unit 149 at Manhole

MH252. A concrete corridor traverses SU143 from east to west, and a concrete wall and subsurface rock formation extend almost the entire length of the survey unit. The concrete wall and rock formation limited the lateral extent of the excavations resulting in near-vertical trenches (Photograph 5-1).

SU143 is a shallow trench consisting of two storm drain trench segments designated as 02-C15-00-2D and 02-C15-00-8E (Figures 3-2 and 5-1). Trench segment 02-C15-00-2D was identified in the Design Plan (TtEC 2008c); however, trench segment 02-C15-00-8E was found during excavation activities. Following the completion of excavation, SU143 displayed a total exposed surface area of 330 m² and was 473 linear feet in length (Table 3-1). As shown in Table 3-2, SU143 was a shallow excavation that varied in depth from 2 feet to 3 feet bgs.

5.6.1 SU143 Removal Action Activities

Excavation activities for SU143 commenced on May 19, 2009 and were completed on May 26, 2009. A total of 15 truckloads (approximately 157 cubic yards) of soil were excavated from SU143 and transferred to RSY2 for processing (Tables 3-3 and 3-4).

Field measurements indicated that approximately 473 linear feet of pipe was removed from SU143. As presented in Table 3-2, both storm drain trench segments were 8-inch-diameter VCP located at 1 foot to 2 feet bgs. The majority of the pipe disintegrated upon removal and was transferred along with the excavated soil to RSY2 for processing. The remainder of the pipe was placed in LLRW bins for disposal by the DON's LLRW contractor (Table 3-8).

An inadequate quantity of sediment was found for sample collection in the majority of the pipes removed from SU143. One sediment sample was collected from a pipe section excavated from SU143 and was analyzed by the on-site laboratory. The analytical results indicated the presence of Ra-226 contamination in this sample (Table 3-5). The laboratory analytical reports for the sediment sample are provided in Appendix C.

Manhole MH252 was located at the south end of Fisher Avenue and was excavated on June 2, 2009 (Figure 5-1). An inadequate quantity of sediment was available from this manhole for sample collection and analysis. Debris from the crushing of MH252 was placed in LLRW bin GFLU001278G10 for disposal (Table 3-8).

Based on the elevated Ra-226 analytical result for the sediment sample discussed above, 27 investigative soil samples were collected along the bottom of SU143 on June 29, 2009. The analytical results did not indicate the presence of radioactivity above the release criteria in these soil samples for any ROC.

5.6.2 SU143 Piping Remaining in Place

Approximately 5 linear feet of trench segment 02-C15-00-8E pipe remained in place following the excavation of SU143 as shown in Table 3-6 and on Figure 5-1. Additional pipe could not be removed without damaging the integrity of the retaining wall on the north side of Spear Avenue. During the excavation activities, about 205 linear feet of trench segment 02-C15-00-8E was removed and an FSS soil sample was collected at the terminus of this segment (Figure 5-1). No radioactivity above the release limits was identified in this FSS soil sample for any ROC. The laboratory analytical report for this sample is presented in the SU143 SUPR provided in Appendix F.

Based on the FSS soil sample collected from the terminus of trench segment 02-C15-00-8E and because 205 linear feet of this trench segment was removed before it was terminated within proximity to the retaining wall, the DON concluded that the remaining storm drain line continuing beneath the retaining wall and into the SFRA property was not radiologically impacted.

5.6.3 SU143 FSS Summary

Collection of the 18 FSS soil samples was performed on July 10, 2009 and the samples were submitted to the on-site laboratory for analysis following the collection of gamma scan readings and direct measurements. Scan readings were found above the investigation levels; however, no elevated direct measurements were identified. The trench unit gamma scan ranges and direct measurements were presented in Attachment 1 of the SU143 SUPR provided in Appendix F. In addition, no radioactivity was identified above the release criteria in the 18 FSS soil samples for any ROC. Figure 5-1 depicts the approximate locations of the FSS soil samples within the survey unit. The on-site and off-site laboratory analytical reports for each FSS soil sample are presented in Attachment 2, and the off-site laboratory quality assurance data are included in Attachment 6 of the SU143 SUPR (Appendix F).

For the FSS, SU143 was defined as the sum of the trench unit and the backfill material composed of radiologically process and released excavated soil. The average net residual radioactivity concentrations for the material used as backfill were 0.040 pCi/g for Cs-137, 0.245 pCi/g for Sr-90, and 0.224 pCi/g for Ra-226. The trench unit average net residual radioactivity concentrations were 0.048 pCi/g for Cs-137, 0.245 pCi/g for Sr-90, and 0.124 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling for SU143 using the larger of the MDL or reported activity resulted in a net residual dose of 2.522 mrem/y with an increased cancer risk of 4.414×10^{-5} for the backfill material and 1.589 mrem/y with an increased cancer risk of 2.705×10^{-5} for the trench unit. The results of the dose and risk modeling efforts were documented in the SU143 SUPR (Appendix F).

The results of the modeling efforts determined that the potential SU143 dose due to activity concentrations greater than or equal to the MDL were 2.522 mrem/y with an increased cancer risk of 4.414×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU143 SUPR provided in Appendix F.

5.6.4 SU143 Backfill Activities

Concurrence to backfill SU143 was obtained from the RASO on August 20, 2009. Radiologically processed and released ES Unit 188 was selected as the backfill material for SU143 (Table 3-1). Backfill activities for SU143 were initiated on October 1, 2009 with the placement of ES Unit 188. Soil compaction testing was performed and final compaction was achieved and certified on November 3, 2009. An estimated 204 cubic yards of soil was used as backfill material in SU143. Soil compaction and site restoration activities are described in Section 7.0.

5.7 TRENCH SURVEY UNIT 144

Trench Survey Unit 144 (SU144) is located midway down and on the west side of Fisher Avenue in Parcel UC2 (Figure 5-1). SU144 connects to Trench Survey Unit 145 on the north and to SU143 on the south and runs parallel to SU138 and SU141 on the east. On its south end, SU144 ties into SU141 at Manhole MH253.

SU144 consists of four shallow storm drain lines identified as 02-C15-00-2A, -2D, -2G, and -8A (Figures 3-2 and 5-1). Although trench segment 02-C15-00-2E was identified in the Design Plan (TtEC 2008c), it was not found following several excavation attempts. In addition, trench segments 02-C15-00-2B and -2C were identified in the Design Plan, but were not removed due to their proximity to the stairways leading down from the contiguous SFRA property on the adjacent slope.

The majority of the trench walls were excavated to near-vertical due to a subsurface rock formation and concrete wall that extended the entire length of SU144 (Photograph 5-1). At the completion of excavation, the exposed surface area for SU144 was 319 m² and it was 460 linear feet in length (Table 3-1). The depth of SU144 ranged from 2 feet to 7 feet bgs as shown in Table 3-2. Groundwater was encountered at approximately 2 feet bgs.

5.7.1 SU144 Removal Action Activities

Excavation activities for SU143 were initiated on May 21, 2009 in trench segment 02-C15-00-2A, and were completed on June 2, 2009. A previously unidentified storm drain trench segment was found during the excavation activities and was designated as trench segment 02-C15-00-8A. About 2 linear feet of this trench segment was removed before it was terminated due to a

stairway obstruction (Figure 5-1). A total of 17 truckloads (approximately 157 cubic yards) of soil were excavated from SU144 and transferred to RSY2 for processing (Tables 3-3 and 3-4).

As measured in the field, about 463 linear feet of pipe was removed during the excavation activities for SU144. Storm drain trench segments 02-C15-00-8A, -2A, and -2D were 4-inch-diameter, 6-inch-diameter, and 8-inch-diameter VCP, respectively (Table 3-2). The pipe associated with these three trench segments ranged from 1 foot to 6 feet bgs. The storm drain line removed from trench segment 02-C15-00-2G was 12-inch-diameter concrete located at depths ranging from 5 feet to 6 feet bgs. The majority of the pipe excavated from SU138 disintegrated upon removal and was transferred along with the excavated soil to RSY2 for processing. As shown in Table 3-8, the remainder of the pipe was placed in bins for disposal by the DON's LLRW contractor.

An inadequate quantity of sediment was available for sample collection from the majority of the pipe excavated from SU144 or Manhole MH253, which was located at the juncture of trench segments 02-C15-00-2A, -2D, and -2G (Figure 5-1). Manhole MH253 was crushed and placed in LLRW bin GFLU001200G9 on June 2, 2009 for disposal by the DON's radiological waste contractor (Table 3-8). One sediment sample collected from pipe excavated from SU144 indicated the presence of Ra-226 contamination (Table 3-5). A copy of the sediment sample analytical reports is provided in Appendix C.

Based on the elevated Ra-226 sediment sample analytical result, six investigative soil samples were collected along the bottom of SU144 on July 1, 2009 (Table 3-1). The analytical results did not indicate the presence of radioactivity above the release criteria in these investigative soil samples for any ROC. Copies of the laboratory analytical reports for the investigative samples were provided in the SU144 SUPR (Appendix F).

5.7.2 SU144 Piping Remaining in Place

Trench segment 02-C15-00-8A was not identified in the Design Plan (TtEC 2008c), but was found during SU144 excavation activities (Figure 5-1). Approximately 2 linear feet of this trench segment was removed before it was terminated at the stairway left in place at the request of the SFRA adjacent to Building 101 and leading down the slope to Fisher Avenue on the west side of SU144 (Table 3-6).

Storm drain trench segments 02-C15-00-2B and -2C were not removed during the SU144 excavation activities (Figure 5-1). Both of these trench segments were left in place to prevent undermining the stairways leading down from the contiguous SFRA property to the north (Table 3-6). Based on field observations, there is an estimated 40 linear feet of storm drain line extending beneath the adjacent slope and under the SFRA property, which was accepted for unrestricted release by the EPA, DTSC, and the CDPH. Two swipe samples each were collected

from pipe remaining in place in trench segments 02-C15-00-2B and -2C. No removable activity was identified above the release criteria (HPS-UCPIPE-062609-001). A copy of the swipe sample report is provided in Appendix G.

Based on the results of the swipe samples collected from trench segments 02-C15-00-2B and -2C and the FSS activities, the DON concluded that the pipe associated with SU144 remaining in place following the removal action was not radiologically impacted.

5.7.3 SU144 FSS Summary

The 18 FSS soil samples were collected from SU144 on July 8, 2009 following the collection of gamma scan readings and direct measurements. Scan readings were found above the investigation levels; however, no elevated direct measurements were identified. The trench unit gamma scan ranges and direct measurements were presented in Attachment 1 of the SU144 SUPR (Appendix F). In addition, no radioactivity above the release criteria was identified in the 18 FSS soil samples for any ROC. Figure 5-1 depicts the locations of the FSS soil samples in SU144. The on-site and off-site laboratory analytical reports for each FSS soil sample are presented in Attachment 2, and the off-site laboratory quality assurance data are included in Attachment 6 of the SU144 SUPR provided in Appendix F.

For the FSS, SU144 was defined as the sum of the trench unit and the backfill material composed of radiologically processed and released excavated soil. The average net residual radioactivity concentrations for backfill material were 0.047 pCi/g for Cs-137, 0.250 pCi/g for Sr-90, and 0.176 pCi/g for Ra-226. The trench unit average net residual radioactivity concentrations were 0.042 pCi/g for Cs-137, 0.275 pCi/g for Sr-90, and 0.051 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling for SU144 using the larger of the MDL or reported activity resulted in a net residual dose of 2.052 mrem/y with an increased cancer risk of 3.565×10^{-5} for the backfill material and 0.9086 mrem/y with an increased cancer risk of 1.449×10^{-5} for the trench unit. The dose and risk modeling results were documented in the SU144 SUPR (Appendix F).

The results of the modeling efforts determined that the potential SU144 dose due to activity concentrations greater than or equal to the MDL were 2.052 mrem/y with an increased cancer risk of 3.565×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU143 SUPR (Appendix F).

5.7.4 SU144 Backfill Activities

The RASO concurred with backfilling SU144 on August 20, 2009. ES Unit 210 was selected as the backfill material for SU144 (Table 3-1). Backfill activities were initiated on August 24, 2009 with an estimated 195 cubic yards of soil placed in the trench excavation. Soil compaction

testing was performed and certified on August 28, 2009. Soil compaction and site restoration activities are described in Section 7.0.

5.8 TRENCH SURVEY UNIT 145

Trench Survey Unit 145 (SU145) is located in the northern portion of Parcel UC2 and extends southward along the west side of Fisher Avenue (Figure 5-1). This trench survey unit connects to SU144 on the south and runs parallel to SU137 on the east. A short segment of SU145 extends westward from Manhole MH257 (associated with SU137) and continues toward Manhole MH258, which was not removed during the excavation activities.

SU145 is comprised of a sanitary sewer trench segment identified as 02-C15-00-1D and a storm drain trench segment designated as 02-C15-00-8B (Figures 3-2 and 5-1). A concrete wall and subsurface rock formation extend the entire length of SU145, which limited the lateral extent of the trenches and resulted in near-vertical trench walls (Photograph 5-1). At the completion of excavation activities, the exposed surface area of SU145 was 169 m² and was 233 linear feet in length (Table 3-1). The total depth of the trench survey unit ranged from 2 feet to 18 feet bgs, as indicated in Table 3-2.

5.8.1 SU145 Removal Action Activities

SU145 excavation activities were initiated for SU145 on May 28, 2009 and were completed on June 25, 2009. Although not identified in the Design Plan (TtEC 2008c), storm drain trench segment 02-C15-00-8B was found during the excavation activities. This storm drain line terminated abruptly under the sidewalk on its north end, but continued southward into SU144. Approximately 77 linear feet of sanitary sewer trench segment 02-C15-00-1D traversed trench segment 02-C15-00-8B from east to west and was terminated on the west at curbside. A total of 11 truckloads (about 85 cubic yards) of soil were excavated from SU145 and transferred to RSY2 for processing (Tables 3-3 and 3-4).

As measured in the field, approximately 230 linear feet of pipe was removed during the SU145 excavation activities. The sanitary sewer trench segment (02-C15-00-1D) was 12-inch-diameter concrete located at depths ranging from 14 feet to 17 feet bgs, and the storm drain line (02-C15-00-8B) was 6-inch-diameter VCP located at a depth of 1.5 feet bgs (Table 3-2). The pipe excavated from SU145 disintegrated upon removal, and the debris was transferred along with the excavated soil to RSY2 for processing. Because the pipe crumbled, no sediment samples could be obtained for analysis.

5.8.2 SU145 Piping Remaining in Place

Sanitary sewer trench segment 02-C15-00-1D connects to SU137 on the east at Manhole MH257 (Figure 5-1). On the west, this trench segment was terminated at the curbside obstruction.

Approximately 77 linear feet of trench segment 02-C15-00-1D was removed from SU145 before the line was terminated (Table 3-6). Based on historical drawings, approximately 37 linear feet of this trench segment remains in place until it terminates at Manhole MH258 located in the Building 101 parking lot adjacent to the SFRA property.

Two swipe samples were collected from the portion of trench segment 02-C15-00-1D that was not excavated (HPS-UCPIPE-062609-001). No activity above the release criteria was identified. A copy of the swipe sample report is provided in Appendix G.

Based on the swipe sample results and the 77 linear feet of pipe that was removed during the excavation activities, the DON concluded that the remaining trench segment 02-C15-00-1D pipe was not impacted.

5.8.3 SU145 FSS Summary

On July 2, 2009, 18 systematic FSS soil samples were collected and submitted to the on-site laboratory for analysis following the collection of gamma scan readings and direct measurements. Scan readings were found above the investigation levels; however, no elevated direct measurements were identified. The trench unit gamma scan ranges and direct measurements were presented in Attachment 1 of the SU145 SUPR (Appendix F). In addition, no radioactivity above the release criteria was identified in the FSS soil samples for any ROC. Figure 5-1 depicts the locations of the FSS soil samples in SU145. The on-site and off-site laboratory analytical reports for each FSS soil sample are presented in Attachment 2 and the off-site laboratory quality assurance data are included in Attachment 6 of the SU145 SUPR provided in Appendix F.

For the FSS, SU145 was defined as the sum of the trench unit and the backfill material composed of both radiologically processed and released excavated soil and a volume of imported fill (Table 3-1). The average net residual radioactivity concentrations for the material used as backfill were 0.043 pCi/g for Cs-137, 0.182 pCi/g for Sr-90, and 0.199 pCi/g for Ra-226. The trench unit average net residual radioactivity concentrations were 0.044 pCi/g for Cs-137, 0.285 pCi/g for Sr-90, and 0.125 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling for SU145 using the larger of the MDL or reported activity resulted in a net residual dose of 1.678 mrem/y with an increased cancer risk of 3.169×10^{-5} for the backfill material and 1.202 mrem/y with an increased cancer risk of 2.188×10^{-5} for the trench unit. The dose and risk modeling parameters and results were documented in the SU145 SUPR (Appendix F).

The results of the modeling efforts determined that the potential SU145 dose due to activity concentrations greater than or equal to the MDL were 1.678 mrem/y with an increased cancer risk of 3.169×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU145 SUPR (Appendix F).

5.8.4 SU145 Backfill Activities

Concurrence to backfill SU145 was obtained from the RASO on August 26, 2009 (Table 3-1). The soil selected as backfill material for SU145 included radiologically surveyed and released ES Unit 212 and a volume of imported fill. Backfill activities were initiated for SU145 on September 25, 2009 with the placement of ES Unit 212 followed by addition of imported fill. An estimated 111 cubic yards of soil was placed in SU145 as backfill material. Compaction testing was performed and certified on October 12, 2009. Soil compaction and site restoration activities are described in Section 7.0.

5.9 TRENCH SURVEY UNIT 149

The majority of Trench Survey Unit 149 (SU149) is located on the south side of Fisher Avenue in Parcel UC2, but extends approximately 25 feet into Parcel UC1 and Spear Avenue (Figure 5-1). SU149 connects to SU142 on the north, SU148 on the west, and SU143 on the east. A 10-inch-diameter natural gas line and a 14-inch-diameter fresh water line traverse the main trench and were not removed during the excavation activities.

SU149 consists of three sanitary sewer lines identified as 02-C15-00-1F, -1G and 1H, and a single storm drain line identified as 02-C15-00-2I (Table 3-2). At the completion of excavation, SU149 displayed an exposed surface area of 804 m² and was 237 linear feet in length. The total depth of the trench survey unit ranged from 4 feet to 16 feet bgs, as indicated in Table 3-2. Groundwater was encountered at 5 feet to 7 feet bgs.

5.9.1 SU149 Removal Action Activities

SU149 excavation activities were initiated on June 10, 2009 in trench segment 02-C15-00-1F, and were completed on July 22, 2009 (Table 3-1). No previously unidentified trench segments were discovered during the excavation of SU149. A total of 75 truckloads (approximately 1,105 cubic yards) of soil were excavated from SU149 and transferred to RSY2 for processing (Tables 3-3 and 3-4).

As measured in the field, an estimated 257 linear feet of pipe was removed during SU149 excavation activities. The sanitary sewer pipe removed from trench segments 02-C15-00-1F and -1G were 21-inch-diameter concrete, and pipe removed from -1H was 24-inch-diameter concrete (Table 3-2). Storm drain trench segment 02-C15-00-2I was 18-inch-diameter VCP. The sanitary sewer pipe was located at depths ranging between 13 feet and 14 feet bgs. The storm drain pipe

was located between 3 feet and 4 feet bgs (Table 3-2). The majority of the pipe excavated from SU149 disintegrated upon removal and the debris was transferred along with the excavated soil to RSY2 for processing. As shown in Table 3-8, the remainder of the pipe was placed in bins for disposal by the DON's LLRW contractor.

Sufficient sediment was found in excavated pipes for sample collection and analysis, as discussed in the SU149 SUPR (Appendix F). Although the majority of the sediment samples analyzed did not indicate the presence of radioactivity above the release criteria for any ROC, Cs-137 contamination was identified in several pipe sections (Table 3-5). The sediment sample analytical reports are provided in Appendix C.

Manhole MH261 was removed from SU149 on June 10, 2009 (Figure 5-1). A sediment sample was collected and submitted to the on-site laboratory for analysis. No radioactivity above the release criteria was identified for any ROC. Manhole MH261 was crushed and placed in LLRW bins BKR0025441G3 and GFLU001130G8 on June 15, 2009 for disposal (Table 3-8).

5.9.2 SU149 Piping Remaining in Place

No known storm drain or sanitary sewer piping associated with SU149 remained in place on Parcels UC1 or UC2 following the completion of the removal action.

5.9.3 SU149 FSS Summary

The 18 systematic FSS soil samples were collected and submitted to the on-site laboratory for analysis on August 12, 2009 following the collection of gamma scan readings and direct measurements. Scan readings were found above the investigation levels, but no elevated direct measurements were identified. No radioactivity above the release criteria was identified in the FSS soil samples for any ROC. The on-site and off-site laboratory analytical reports for each FSS soil sample are presented in Attachment 2, and the off-site laboratory quality assurance data are included in Attachment 6 of the SU149 SUPR provided in Appendix F. Figure 5-1 identifies the approximate FSS sample collection locations in the trench survey unit.

For the FSS, SU149 was defined as the sum of the trench unit and the backfill material composed of both radiologically surveyed and released excavated soil and a volume of imported fill. The average net residual radioactivity concentrations for the backfill material in Survey Unit 149 were 0.052 pCi/g for Cs-137, 0.087 pCi/g for Sr-90, and 0.330 pCi/g for Ra-226. The trench unit average net residual radioactivity concentrations were 0.032 pCi/g for Cs-137, 0.130 pCi/g for Sr-90, and 0.170 pCi/g for Ra-226. The activity used to model each radionuclide was based on the isotopic net concentration.

RESRAD modeling for SU149 using the larger of the MDL or reported activity resulted in a net residual dose of 5.335 mrem/y with an increased cancer risk of 8.629×10^{-5} for the backfill

material and 3.036 mrem/y with an increased cancer risk of 4.813×10^{-5} for the trench unit. The dose and risk modeling efforts are documented in the SU149 SUPR (Appendix F).

The results of the modeling efforts determined that the potential SU149 dose due to activity concentrations greater than or equal to the MDL were 5.335 mrem/y with an increased cancer risk of 8.629×10^{-5} . These results met the EPA risk criterion of less than 3×10^{-4} , which supports free release. No further action was recommended in the SU149 SUPR (Appendix F).

5.9.4 SU149 Backfill Activities

The RASO concurred with backfilling SU149 on September 27, 2009. As indicated in Table 3-1, the soil selected as backfill material included ES Unit 230 and a volume of imported fill. Backfill activities were initiated on September 28, 2009 with the placement of ES Unit 230, and continued with the addition of the imported fill. Soil compaction testing was performed and certification was achieved on November 3, 2009. An estimated 1,216 cubic yards of soil was placed in SU149 as backfill material. Soil compaction and site restoration activities are described in Section 7.0.

5.10 ROBINSON STREET STORM DRAIN AND SANITARY SEWER PIPING

To continue its ongoing support of the artists occupying Building 101 on the SFRA property to the west of Robinson Street, the City of San Francisco requested that the DON not remove specific storm drain and sanitary sewer piping associated with the structure (Figure 3-2). Leaving the storm drain and sanitary sewers in place would eliminate flooding the building basement during storm events through the use of sump pumps and would support the installation and use of the SFRA sanitary sewer lift station near Robinson Street.

The manholes left in place in the northern area of Parcel UC2 included MH250, MH258, MH1122, MH1123, MH1124, MH1125, and MH1126. Manholes MH258, MH1122, and MH1125 are associated with the sanitary sewer system. Manholes MH250, MH1123, MH1124, and MH1126 are associated with the storm drain system.

The sanitary sewer piping left in place runs parallel to the SFRA/Parcel UC2 property boundary, connects to MH255 in Robinson Street, continues eastward to MH252 in the Building 101 parking area, and terminates at MH258. Approximately 37 linear feet of pipe extends past Manhole MH258 beneath the hill toward Fisher Avenue where it previously connected to SU145 (Figure 5-1). The remaining 77 linear feet of this sanitary sewer line was removed during excavation of SU145 (Table 3-6).

The storm drain lines left in place to support the Building 101 artists commence at Manholes MH254 and MH255 and connect to MH253 in Robinson Street. The storm drain piping continues beneath Robinson Street, crosses the Parcel UC2 property boundary, and continues to

Manhole MH025 located on Parcel C. Another section of storm drain line continues from MH251 in the Building 101 parking lot, beneath Robinson Street, and also terminates at Manhole MH025 located on Parcel C. The final section of the storm drain line left in place at the request of the City of San Francisco extends eastward from Manhole MH251 parallel to the Parcel UC2 property boundary beneath the Building 101 parking lot to Manhole MH250.

Prior to concurring on leaving the storm drain lines in place for the occupants of Building 101, two sediment samples were collected from Manhole MH025 located on Parcel C. This manhole was selected because two storm drain pipe segments from the Building 101 area terminate at MH025. The first sediment sample (6PCMHHX-001-072-01) was collected from MH025 on October 18, 2006, and submitted to the on-site laboratory for analysis. The second sediment sample (6PBMH33B025-336-01) was collected from MH025 a year later on October 20, 2007. The laboratory analytical results did not indicate the presence of radioactivity above the release criteria in either sediment sample. Copies of the sediment sample analytical results are provided in Appendix C.

An estimated 367 linear feet of the sanitary sewer and 489 linear feet of the storm drain line remain in place in the northwest corner of Parcel UC2 (Table 3-6). Because the SFRA property was radiologically released by the regulatory agencies and transferred to the City of San Francisco, storm drain and sanitary sewer flows from this property are unlikely to contain radioactive contamination. Figures 3-2 and 5-1 depict the locations of the storm drain and sanitary sewer remaining in place at the request of the City of San Francisco.

6.0 BUILDING 819 FINAL STATUS SURVEY RESULTS

The following sections describe Building 819, provide an abbreviated history, summarize the FSS results, and discuss regulatory concurrence for unrestricted, free release of the structure. The location of Building 819 is shown on Figure 4-1. The final FSS results for Building 819 (TtEC 2007c) were submitted to the DON and the regulatory agencies on September 12, 2007. The DON received a letter from the DTSC dated October 28, 2009 (DTSC 2009) that forwarded the CDPH concurrence memorandum dated April 4, 2008 (CDPH 2008) for the unrestricted release of Building 819, with respect to radiological issues. A copy of the DTSC letter and the CDPH concurrence memorandum are provided in Appendix H.

6.1 DESCRIPTION

Building 819 is located on the western end of Parcel UC1, immediately adjacent to and north of Building 823 and Spear Avenue and southwest of Parcel D-2 (Figure 4-1). Building 819 is a former sewage lift station approximately 130 m² in size. There is only about 1 foot of separation between Buildings 819 and 823 (Photograph 6-1). Constructed of reinforced concrete with a flat concrete roof, Building 819 consists primarily of steel, concrete, and piping. It is windowless with a single access door. The interior of the structure is divided into two rooms identified as the “Dry Well” and “Wet Well” with both an inlet and a bypass culvert with associated sewer drain lines (Photograph 6-2). The dry and wet wells are each approximately 20 feet in depth.

Currently vacant, Building 819 is no longer in service as a sanitary sewer pump station. The SFRA Reuse Plan (SFRA 1997) identified the future use of the Building 819 property as a “mixed use” zone that may include residential areas.

6.2 BACKGROUND

The HRA, Volume II (NAVSEA 2004) indicates that Building 819 historically was used as Sewer Pump Station A. Prior to 1974, there was a potential for release of permissible quantities of licensed radioactive materials into the sanitary sewer system from the largely undocumented disposal activities associated with the shipyard and NRDL operations (TtEC 2007c). Radioactive materials may have been present in the Wet Well area that contained HPS sewage and within the internal piping, pumps, and related components of the system. However, it was unknown whether radioactive materials were released into the environment as a direct result of sewage pumping operations associated with buildings and structures known to historically handle and process radioactive materials.

A redesigned sewage pumping system was scheduled by the DON for installation in the Wet Well area of Building 819. Based on the operating history at HPS, the DON conducted

investigative radiological survey activities in the spring of 2004 to characterize the radiological status of those sections of Building 819 where the new equipment was to be installed. The radiological survey activities were divided into two phases: 1) assessment of the sediment for radioactivity prior to pumping out the Wet Well and 2) performing alpha, beta, and gamma survey activities once the Wet Well was pumped dry. Swipe samples and exposure rate measurements also were collected and evaluated. A random/bias measurement pattern was used for both the reference (background) area and in each of the Wet Well survey units; half of the measurement locations were randomly selected and the other half were biased locations. Biased measurement locations were selected based on those areas where the highest scan readings were obtained, and/or the observations and technical judgment of the survey technician.

The results of the DON's survey activities showed that the residual radioactivity in the Wet Well was less than the release criteria when compared to background levels for comparable site locations where radioactive materials were not used. In addition, there was no evidence of small areas of elevated activity. The available details of the investigation and survey activities performed by the DON were presented in the final FSS (TtEC 2007c).

The HRA, Volume II (NAVSEA 2004) identified Cs-137 and Ra-226 as the primary ROCs associated with Building 819. Sr-90 was added to the list of ROCs for Building 819 to correspond to the designated ROCs associated with the HPS storm drain and sanitary sewer system.

6.3 FSS SUMMARY

A radiological scoping survey was performed for Building 819 in 2004, based on the recommendations of the HRA (NAVSEA 2004). MARSSIM (NUREG-1575; DoD et al. 2000), the Nonparametric Statistical Methodology for the Design and Analysis of the Final Status Decommissioning Survey Guide (NUREG-1505; NRC 1998), and the Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions (NUREG/CR-1507; NRC 1997) guided the design of the survey and its implementation. The survey activities were performed in accordance with the requirements outlined in the final Base-wide Radiological Work Plan (TtFW 2005).

The survey activities to be performed were described in the final Work Plan Building 819 Disposition Survey (TtFW 2004). The intent of the survey design was to collect sufficient data to support the development of an FSS in accordance with MARSSIM (NUREG-1575; DoD et al. 2000). To maintain the potential for the scoping survey to become an FSS, data were continuously analyzed to determine the relationship between each survey unit and the reference area. The objective of the survey was to demonstrate that residual radioactivity levels in Building 819 met the radionuclide-specific release criteria for the ROCs (TtEC 2007c). The goal of the Building 819 survey activities was to achieve unrestricted release. The detailed results of

the survey activities are documented in the Building 819 FSS (TtEC 2007c) and are summarized in the following sections.

6.3.1 Material and Equipment Survey Results

Mobilization to begin the survey activities began in July 2004. Survey activities were performed on the sanitary sewer pump station components and drainage systems to facilitate removal prior to beginning the floor survey activities and to ensure that radioactively contaminated material was not inadvertently removed from the building.

The sanitary sewer pump station components were dismantled, cleaned, and surveyed prior to disposal. In addition, two pumps, two sump pumps, three pump suction legs, and associated discharge piping were surveyed and removed. Piping and components not removed from the building were surveyed in place. No residual radioactive contamination was identified during the pump station component or drainage system survey activities.

6.3.2 Building Survey Results

Following the removal of material and equipment from Building 819, the remaining surfaces were dewatered, and residual dirt and debris were removed. Building 819 was divided into four Class 1 survey units: the Wet Well (Survey Unit 1), the Dry Well (Survey Unit 2), the inlet culvert (Survey Unit 3), and the bypass culvert (Survey Unit 4). Each survey unit was less than 100 m² in area and included the floors and walls less than or equal to 2 meters above the respective floor areas. VSP software was used to determine the survey unit grid parameters and discrete data collection locations.

The investigation levels for total alpha and beta activity were set at 100 dpm/100 cm² and 1,000 dpm/100 cm², respectively. The alpha and beta loose surface investigation levels were 20 percent of the values for total activity. The investigation level for gamma surveys was established at the reference area mean plus 3-sigma, where sigma was the standard deviation of the gamma readings in the reference area. Although there are no established release criteria for building interior surfaces based on gamma exposure rates, the guidance document, Manual for Conducting Radiological Surveys in Support of License Termination (NUREG/CR-5849; NRC 1992), specifies that the average of exposure rates that are measured 1 meter above the surface of a survey unit should not exceed twice the background measurements. Building 230 was selected as the reference area because its surroundings, material composition, and overall characteristics were similar to those present at Building 819.

The survey activities included a 100 percent surface scan for alpha/beta and gamma emitters. In addition, direct measurements were logged at each designated sample point within each survey unit, and a swipe sample was collected at each of these locations. Surface scanning was performed by moving a detection instrument over a surface at a specified speed and distance

above the surface to detect radiation and identify areas that may require additional survey measurements. Direct measurements were performed by holding the detection instrument over a surface for a specified time at a set distance and were used to determine whether contamination was present on surface areas. The purpose of the swipe samples was to evaluate the presence of loose alpha and beta-gamma surface activity. In accordance with MARSSIM (NUREG-1575; DoD et al. 2000), systematic measurements and sample collection, in conjunction with surface scanning, were used to obtain adequate assurance that small areas of elevated radioactivity would satisfy the release criteria.

The surface scan results for alpha, beta, and gamma radiation were comparable to background levels. No additional biased direct measurements were collected based on the results of the surface scans. Alpha and beta direct measurement survey data results were compared directly to reference measurements. None of the direct measurements collected from the survey units exceeded the release criteria for alpha or beta emitters.

The investigation level for gamma emitters during the surface scan surveys was slightly exceeded in several instances. However, these areas were verified to be free of any unique sources of radioactive materials by evaluating the alpha and beta/gamma scan and direct measurements. The gamma investigation level exceedances were attributed to radon gas resulting from naturally occurring radioactive material.

Survey results were statistically analyzed using the Wilcoxon Rank-Sum unity rule test and the paired *t*-test to determine whether residual radioactivity was present and to ascertain whether conditions within the survey units met the release criteria for unrestricted use. The survey results show that Building 819 met the release criteria.

Dose modeling was performed for Building 819 as a means to calculate the residual dose to the critical group using the residential scenario in RESRAD-BUILD. Because the mean concentrations for both alpha and beta emitters were less than zero, each survey unit was assigned an administrative dose of 0.00 mrem/y. Based on these results, no further dose modeling was performed.

No evidence of residual radioactivity was found to be present in Building 819 based on the results of the survey activities and laboratory analytical results (TtEC 2007c). The analysis of the collected field data showed that the residual radioactivity in Building 819 met the stated release criteria and the structure was ready for unconditional, unrestricted use.

Demobilization from Building 819 occurred in late July 2004. Equipment and instruments used during the survey activities were verified to be less than the Regulatory Guide 1.86 (AEC 1974) limits specified for Cs-137, Sr-90, and Ra-226. These items were then unconditionally released back to the supplier.

6.4 REGULATORY CONCURRENCE

The final Building 819 FSS report was transmitted to the EPA, DTSC, and CDPH, as well as other interested entities on September 12, 2007. The DON received a letter from the DTSC dated October 28, 2009 (DTSC 2009) that forwarded the CDPH concurrence memorandum dated April 4, 2008 (CDPH 2008) for the unrestricted release of Building 819, with respect to radiological issues. A copy of the DTSC letter and the CDPH concurrence memorandum are provided in Appendix H.

The CDPH based its concurrence on the results of the FSS and the results of its own confirmation surveys performed in Building 819. The DTSC and CDPH issued radiological free release for all of the above-grade portions of Building 819 as well as the subsurface sump structure. However, radiological free release of the subsurface sewer and utility lines emanating from Building 819 was not issued. According to the correspondence from the regulatory agencies, DTSC and CDPH approval for free release of the subsurface storm drain and sanitary sewer lines associated with Building 819 could only be obtained in conjunction with regulatory approval of the Parcel UC1 and UC2 RACR.

The EPA withheld approval for the unrestricted, free release of Building 819 or associated subsurface sewer utility lines until the final RACR documenting the removal of the storm drain and sanitary sewer lines had been reviewed. According to the EPA, concurrence for free release of Building 819 will be provided to the DON in conjunction with approval of the Parcel UC1 and UC2 RACR.

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7.0 SITE RESTORATION AND TEMPORARY SWALE CONSTRUCTION

Site restoration and temporary swale installation activities were performed following the completion of the excavation and backfill of the Parcels UC1 and UC2 survey units. These activities are described in the following sections.

7.1 SITE RESTORATION

Backfill and compaction activities for the Parcels UC1 and UC2 storm drain and sanitary sewer excavations were performed in accordance with the Design Plan (TtEC 2008c) and the Basewide Construction Specifications (TtEC 2007b).

For elevations 3 feet to 4 feet bgs and deeper, backfill material was placed in 2-foot-thick loose lifts using radiologically surveyed and released excavated soil, imported fill, or a combination of the two. The backfill soil placed in the trench survey units was then compacted by pressing the material down using mechanical compaction equipment. This process was repeated until the appropriate elevation and slope were achieved at approximately 4 feet below the final grade in roadway trenches and 0.5 foot below the final grade in non-roadway trenches. The remaining 4 feet was backfilled with imported fill for the roadway trenches and with previously removed and crushed asphalt material for the non-roadway trenches.

To ensure that the imported fill would meet the compaction requirements, the soil was visually inspected prior to placement to verify that it consisted of well-graded sands and gravels that did not contain particles greater than 2 inches in diameter. Samples of the imported fill were evaluated using the American Society for Testing and Materials (ASTM) D422 sieve analysis method and ASTM D1557 maximum density testing at a frequency of one sample per 5,000 cubic yards. These data were used to determine the compaction of the backfill material via neutron densitometry.

Once the proper elevation and slope were achieved in the roadway trenches, the imported fill was placed in 1-foot lifts using a single drum vibratory roller for each lift. Compaction testing was performed for each 1-foot lift depth interval with a minimum rate of one test per every 50 linear feet of backfilled trench to verify that a relative compaction of 95 percent or greater was achieved. Compaction testing was performed in accordance with ASTM Standard D6938-08a (ASTM 2008). Test locations and compaction results are presented on Figure 7-1 for Parcel UC1 and on Figure 7-2 for Parcel UC2. The compaction test reports are provided in Appendix I.

Stockpiled road base (recycled asphalt) material was placed over the compacted imported fill in roadway areas followed by 4 inches of new asphalt to restore Fisher and Spear Avenues to levels consistent with pre-excavation and surrounding unexcavated conditions (Photograph 7-1). In

addition, a double yellow center line and two white roadway edge lines were painted on the streets in accordance with the Manual on Uniform Traffic Control Devices for Streets and Highways Revision 2 (DOT 2007) to complete the restoration activities (Figure 7-3 and Photograph 7-2).

7.2 TEMPORARY SWALE CONSTRUCTION

To temporarily replace the removed Parcels UC1 and UC2 underground storm drain systems, a surface-based system consisting of 5,155 linear feet of drainage swales and curbs was installed to direct overland stormwater runoff to active Parcel C and Parcel E storm drain systems and Parcel G swales. The temporary swale system is depicted on Figure 7-4. The surface stormwater system was designed to handle a 2-year return period storm. The design calculations were based on 2.07 inches of rainfall per hour. The constructed system can remove stormwater at a rate of 4.43 cubic feet per second or approximately 2,000 gallons per hour. The design of the swales provided for trapping sediments and a gradual slope for gravity flow.

The stormwater system included the construction of two drainage swales and three catch basins for Parcels UC1 and UC2. One swale was constructed along the northern edge of Fisher Avenue and the other swale was installed along the northern edge of Spear Avenue. These asphalt swales were designed to be continuous and collect stormwater runoff from the SFRA property to the north and the roadways. Although requested, no stormwater volume calculations were provided by the SFRA for discharges to the HPS swale system. Consequently, the temporary design could only be based on the typical 2-year return period storm. Details for swale construction were presented in Appendix A of the final Design Plan (TtEC 2008c) and the drainage details and tie-in to the Parcel G swales are depicted on Figure 7-5.

The design included the construction of asphalt swales along the northern project boundary to effectively capture stormwater from the SFRA property and the roadway. The asphalt swale is continuous from the Robinson/Fisher intersection to the intersection of Crisp Road and Spear Avenue. This swale system discharges to the active storm drain system in Parcel C via a new catch basin installed in the Fisher Avenue swale and to an active catch basin at the east end of Crisp Road (east of Building 808).

7.2.1 Parcel UC1 Temporary Swales

During site restoration activities, the north edge of Spear Avenue was graded specifically to direct stormwater flow. Existing Spear Avenue curbing was used to direct stormwater from the southern edge of the roadway into drainage swales in Parcel G. A 10-foot-wide by 0.5-foot-deep swale was installed along the northern edge of Spear Avenue in Parcel UC1. Constructed of 4-inch-thick asphalt, this temporary swale captures and directs stormwater from the roadway, the Building 813 parking lot, and runoff from the SFRA property. The swale is sloped to direct stormwater

toward the active Parcel E system through an existing catch basin located at the intersection of Spear Avenue and Crisp Road near Building 808 (Figure 7-4). At the eastern end of Parcel UC1, a new catch basin was installed at the intersection of Fisher and Spear Avenues to capture stormwater and redirect the flow to the existing Parcel G swales. A 12-inch-diameter high-density polyethylene (HDPE) pipe was installed to connect this catch basin to the Morrell Street swale in Parcel G.

As sanitary sewer and storm drain line removal actions progress in Parcel E, the catch basin at the western end of the swale will be taken out of service. The Spear Avenue swale in Parcel UC1 was designed specifically to incorporate a secondary stormwater connection that could be added to the “H” Street swale in Parcel G at the Spear Avenue sediment trap in anticipation of future storm drain removal activities.

7.2.2 Parcel UC2 Temporary Swales

The Parcel UC2 temporary swale was constructed within the footprint of the sidewalk that was removed along the northern edge of Fisher Avenue during the storm drain and sanitary sewer removal action. The sidewalk curb was retained and utilized for storm water containment and flow management. The constructed Fisher Avenue swale is 4 feet wide with a maximum depth of 0.75 foot and is lined with a minimum of 2-inch-thick asphalt.

The constructed swale was designed to divert water from the intersection of Robinson Street and Fisher Avenue, overflow from the Spear Avenue swale, stormwater discharge from the SFRA property, and drainage from the Building 101 retaining wall to a new 12-inch-diameter catch basin. Depicted on Figure 7-4, this catch basin was installed midway along the Fisher Avenue swale at a natural low spot. An 18-inch-diameter HDPE pipe was installed to connect this catch basin to the existing Parcel C storm drain system. A second catch basin was installed in Fisher Avenue that also ties into the active Parcel C storm drain system.

Because a part of the Parcel C stormwater system was deactivated when Manhole MH259 and the associated piping that tied into Parcel UC2 were removed, a total of 80 feet of 18-inch-diameter HDPE pipe was installed to connect the two segments and complete the system in Parcel UC2. Figure 7-5 provided the constructed swale detail.

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8.0 COST SUMMARY

This section provides a summary of the estimated costs incurred in performing the Parcel UC1 and Parcel UC2 removal action activities. The cost of the removal actions is approximate due to numerous factors including changes in contract vehicles and overlapping removal action activities performed for other HPS parcels within the same period of time.

<u>ACTIVITY</u>	<u>COST</u>
Removal	\$ 4,399,875
Remediation (including laboratory costs)	\$ 3,124,059
Restoration	\$ 1,448,230
LLRW Disposal	\$ 1,800,000
Total	\$10,722,164

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9.0 CONCLUSIONS AND RECOMMENDATION

The Parcels UC1 and UC2 RACR was prepared at the direction of the DON to summarize the results of the radiological work performed for the storm drain and sanitary sewer removal actions and the Building 819 FSS to protect the public health, welfare, and the environment from actual or potential releases of radiologic contaminants and document the results of the implemented radiological removal remedies selected in each of the final RODs (DON 2009a and 2009b). This RACR did not address non-radiological contamination on Parcels UC1 and UC2 or include or affect any other designated HPS parcels.

Based on its radiological operational history, the DON determined that low-level radioactive contamination present in some buildings, storm drain and sanitary sewer lines, soil, debris, and slag material at HPS required a response action. This decision was documented in the AM (DON 2006) and physical removal with proper off-site disposal was selected as the only viable alternative. The cleanup goals presented in the AM for localized radioactive contamination at HPS were developed based on the ARARs and were considered to be the most conservative available. ROCs for the storm drain and sanitary sewer systems as well as Building 819 included Cs-137, Ra-226, and Sr-90. The Parcels UC1 and UC2 storm drain and sanitary sewer removal actions and the Building 819 FSS were performed in accordance with the requirements of CERCLA as amended by SARA and, to the extent practicable, the NCP.

RAOs for Parcels UC1 and UC2 were established based on attainment of regulatory requirements; standards and guidance; contaminated media; chemicals of concern; potential receptors and exposure scenarios; and human health and ecological risks. The success of the remedial actions ultimately is measured by its ability to meet the RAOs. The Parcels UC1 and UC2 RAOs and remediation goals were identified in respective RODs (DON 2009a and 2009b).

The present-day configuration of the storm drain and sanitary sewer system is the result of an evolutionary process that likely caused radiological contamination from the same sources to impact piping and other components of both the storm drain and sanitary sewer systems. The CSM is based on the supposition that radioactive materials likely were discharged from numerous locations throughout HPS into the storm drain and sanitary sewer system and may have been released into surrounding soils during the course of normal operations and maintenance or repair activities (DON 2008). Because the storm drain and sanitary sewer pipelines were not sealed, some leaking was anticipated, and historical information indicates that the pipelines often were cleaned by power washing that may have forced radiological contamination into the surrounding soil. The storm drain and sanitary sewer removal actions performed to date support the accuracy of the CSM. Similar types of fill materials were found in the excavated trenches and no waste materials have been discovered. Identified radiological

contamination primarily has been found in excavated soil and there has been little indication of historical spills or accidental releases based on historical research and radiologically impacted site investigations.

Fieldwork for the Parcels UC1 and UC2 storm drain and sanitary sewer removal actions was initiated in March 2009 and resulted in the designation of 20 trench survey units (11 in Parcel UC1 and 9 in Parcel UC2). The Parcel UC1 trench survey units were identified as SU133, SU139, SU140, SU146, SU147, SU148, SU150, SU164, SU167, SU168, and SU171. Building 819 (former sewer lift station) and Building 823 (emergency generator for the sewer lift station) were located within the property boundary at the west end of Parcel UC1. The Parcel UC2 trench survey units were identified as SU136, SU137, SU138, SU141 through SU145, and SU149. There were no buildings associated with Parcel UC2; however, it does include the asphalt parking lot located adjacent to Building 101 on the SFRA property.

There were 42 storm drain lines and 57 sanitary sewer lines associated with Parcels UC1 and UC2. In total, 6,407 linear feet of trench was excavated with 547 linear feet resulting from pipe identified in the field that was not in the original Design Plan (TtEC 2008c). The total area of the exposed trench surface in Parcel UC1 was 8,004 m² with 3,509 linear feet of trench and 5,857 m² in Parcel UC2 with 2,632 linear feet of trench. The maximum depth of the excavated trenches was 21 feet bgs. The majority of the excavated trenches were near-vertical due to the presence of a bedrock formation and lack of fill material beneath Parcels UC1 and UC2.

A portion of the sanitary sewer line excavated at the western end of Parcel UC1 was situated within IR Program site IR-36. The chemicals of concern associated with IR-36 include volatile organic compounds; semi-volatile organic compounds; pesticides; polycyclic aromatic hydrocarbons; polychlorinated biphenyls; total oil and grease; total petroleum hydrocarbons as diesel, gasoline, and motor oil; and heavy metals. Samples of IR-36 excavated soil were analyzed for the chemicals of concern and the results compared against the release criteria identified in the Parcel UC1 ROD (DON 2009a). The analytical results indicated the presence of elevated levels of arsenic in the soil excavated from IR-36. Following radiological processing and release, soils excavated from IR-36 were disposed of off-site by the DON's non-radiological waste contractor along with any non-IR Program soil that exhibited odor or staining.

During the excavation of the Parcels UC1 and UC2 storm drains and sanitary sewers, approximately 20,680 cubic yards of soil was generated and placed on individual screening pads for radiological processing in RSY2. A total of 2,631 soil samples were collected from the screening pads during the RSY2 radiological processing activities and analyzed by the on-site laboratory. About 876 cubic yards of soil processed in RSY2 exceeded the release criteria and was remediated. The remediated soil was placed in LLRW bins for disposal by the DON's radiological waste contractor. Radionuclide concentrations in the soil samples collected from the excavated soil processed in RSY2 that exceeded the release criteria included Cs-137 ranging

from 0.11532 pCi/g to 0.16916 pCi/g, and Ra-226 ranging from 1.4909 pCi/g to 3.2976 pCi/g. The majority of the soil derived from the storm drain and sanitary sewer excavation activities and processed in RSY2 was backfilled into the appropriate trench survey units.

A total of 55 sediment samples were collected from pipe and 10 sediment samples were collected from manholes for analysis by gamma spectroscopy during the removal actions. Based on the sediment sample analytical results, nine manhole samples and 26 pipe samples did not indicate the presence of radioactivity above the release criteria for any ROC. In those sediment samples found to be contaminated, Cs-137 concentrations ranged from 0.11595 pCi/g to 0.34159 pCi/g, and Ra-226 contamination ranged from 1.6422 pCi/g to 2.3489 pCi/g. The piping that contained contaminated sediment was placed in LLRW bins for disposal by the DON's radiological waste contractor.

Following the completion of excavation, numerous soil samples were collected from the trench survey units to determine whether radionuclide contamination was present above the release criteria. These samples were submitted to the on-site laboratory for analysis with 10 percent sent to the off-site laboratory for Sr-90 analysis and quality assurance verification. A total of 438 investigative soil samples collected from the excavated trenches were analyzed and evaluated during the removal actions. The Cs-137 contamination that exceeded the release limit ranged from 0.11564 pCi/g to 0.19605 pCi/g, and the Ra-226 contamination ranged from 1.5045 pCi/g to 3.3780 pCi/g. Based on the soil sample analytical results, approximately 262 cubic yards of contaminated soil was remediated from the trenches in Parcels UC1 and UC2. The remediated soil was placed in LLRW bins for disposal by the DON's radiological waste contractor. The majority of the contaminated soil remediated from the trenches was excavated from SU136 in Parcel UC2.

While the majority of the pipe excavated from Parcels UC1 and UC2 disintegrated upon removal and was transferred along with the ES for processing in RSY2, the remaining excavated pipe was placed in LLRW bins for disposal along with 35 excavated manholes. With the concurrence of the DON, radiological survey activities were not performed on pipe or manholes excavated from Parcels UC1 or UC2 due to the limited quantity removed and to expedite fieldwork activities.

Some piping (pipe and manholes) associated with the Parcels UC1 and UC2 storm drain and sanitary sewers were not excavated during the removal actions. Typically, these pipes were not removed due to the presence of a building or other obstruction that prohibited further excavation. Swipe samples collected from some pipe remaining in place did not show the presence of removable radioactivity above the release limits.

To continue its ongoing support of the artists occupying Building 101 on the SFRA property to the west of Robinson Street, the City of San Francisco requested that the DON not remove specific storm drain and sanitary sewer piping associated with the structure. Leaving the storm

drain and sanitary sewers in place would eliminate flooding the building basement during storm events through the use of sump pumps and would support the installation and use of the SFRA sanitary sewer lift station near Robinson Street. Because the SFRA property was radiologically released for unrestricted use by the regulatory agencies, the storm drain and sanitary sewer flows from this property into the HPS storm drains and sanitary sewers are unlikely to contain radioactive contamination. An estimated 367 linear feet of the sanitary sewer and 489 linear feet of the storm drain lines remain in place following the completion of the removal actions in the northwest area of Parcel UC2.

Prior to concurring on leaving the storm drain lines in place for the occupants of Building 101, two sediment samples were collected from Manhole MH025 located on Parcel C approximately 1 year apart. This manhole was selected because two storm drain segments from the Building 101 area flow through Parcel UC2 piping and terminate at MH025. The laboratory analytical results did not indicate the presence of radioactivity above the release criteria in either of the two downgradient sediment samples for any ROC.

In accordance with the Work Plan (TtEC 2008f), FSSs for every excavated trench section included a 100 percent surface scan and systematic and biased direct measurements. Direct measurements were collected at each systematic sample location prior to the collection of the soil sample. None of the direct measurements collected during the FSS activities indicated the presence of radionuclide contamination.

A minimum of 18 discrete systematic soil samples were collected from each trench survey unit during the FSS activities and submitted to the on-site laboratory for analysis by gamma spectroscopy. In addition, 10 percent of the samples were sent to the off-site laboratory for Sr-90 analysis and an additional 10 percent of the samples for quality assurance verification. In total, 360 soil samples were collected from the designated trench survey units and analyzed during the FSS activities.

The backfill material and the trench units were modeled separately with input parameters using the larger of the MDL or reported activity concentrations. The results of the modeling efforts for the 20 trench survey units in Parcels UC1 and UC2 indicated that residual radioactivity met the EPA risk criterion of less than 3×10^{-4} , which supports free release. Based on the dose and risk modeling results, the highest net dose to workers or members of the public as a result of exposures to residual radioactive material in soil on Parcel UC1 was identified in SU171 at 5.702 mrem/y with an excess lifetime cancer risk of 9.317×10^{-5} , and on Parcel UC2 in SU142 at 5.896 mrem/y with an excess lifetime cancer risk of 9.278×10^{-5} .

In addition to the dose and risk modeling efforts, the environmental ALARA process was implemented for each of the 20 survey units as described in the SUPRA (Appendix A) and as discussed in each individual SUPR. Only qualitative analyses were required based on recent

estimates of dose to the public from HPS operations. The ALARA process supported the results of the dose modeling efforts and the recommendations for unrestricted radiological release of the trench survey units associated with Parcels UC1 and UC2.

The radiological details of the storm drain and sanitary sewer removal work completed for Parcels UC1 and UC2 were provided in each of the SUPRs included in Appendices E and F. The goal of the SUPRs was to demonstrate that identified residual radioactivity levels inside the excavated trenches and within the excavated soil and/or imported fill material met the established release criteria. Based on the conclusions presented in each of the SUPRs, the DON achieved its stated objectives.

An FSS was performed for Building 819 in 2004. The objective of the survey was to demonstrate that residual radioactivity levels in Building 819 met the radionuclide-specific release criteria for the ROCs. The detailed results of the survey activities were documented in the Building 819 FSS (TtEC 2007c). No evidence of residual radioactivity was found to be present in the structure based on the results of the survey activities and laboratory analytical results. An analysis of the collected field data showed that the residual radioactivity in Building 819 met the stated release criteria and the structure was ready for unconditional, unrestricted use. The DTSC and CDPH issued radiological free release for all of the above-grade portions of Building 819 as well as the subsurface sump areas.

9.1 RECOMMENDATION

The purpose of the storm drain and sanitary sewer system removal actions was to meet the currently specified removal action objectives and achieve the unrestricted radiological release of the Parcels UC1 and UC2 storm drain and sanitary sewer system. The removal action objectives were developed to protect public health and welfare and the environment and to preclude potential exposure to future residents or workers by physically removing the existing storm drain and sanitary sewer lines and disposing of the associated radioactive contaminants that exceed the radiological remedial objectives. By meeting these removal action objectives, the potential migration of contaminated material within or outside these systems on Parcels UC1 and UC2 was substantially eliminated. The release criteria identified in the AM (DON 2006), Parcels UC1 and UC2 RODs (DON 2009a and 2009b), and the SUPRA (Appendix A) and ARARs for dose and risk were met and no further action was required. Each of the 20 trench survey units associated with Parcels UC1 and UC2 met the EPA risk criterion of less than 3×10^{-4} , which supports free release.

The results of the Parcels UC1 and UC2 storm drain and sanitary sewer removal actions support the accuracy of the CSM. Similar types of fill materials were found in the excavated trenches and no waste materials were discovered. Identified radiological contamination was found

primarily in excavated soil and there was little indication of historical spills or accidental releases based on historical research and radiologically impacted site investigations.

The DON met its stated radiological removal action objectives to prevent or minimize exposure to ROCs in concentrations that exceed remediation goals for all potentially complete exposure pathways. The completed remedial actions were protective of human health and the environment, complied with federal and state statutes and regulations that are applicable or relevant and appropriate, and were cost-effective. In addition, the removal actions resulted in a reduction of the potential risks to levels below remediation goals associated with potential exposures to the radionuclides of concern. Based on the results of the Parcels UC1 and UC2 storm drain and sanitary sewer removal actions, residual dose and risk modeling efforts, implementation of the ALARA process, and the radiological survey and unrestricted release of Building 819, the classification of “radiologically impacted” should be removed from Parcels UC1 and UC2 and no further actions are required.

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TABLES

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TABLE 2-1

RELEASE CRITERIA (ACTION MEMORANDUM)

Radionuclide	Surfaces			Soil ^d (pCi/g)				Water ^h (pCi/L)
	Equipment, Waste (dpm/100 cm ²) ^a	Structures (dpm/100 cm ²) ^b	Residual Dose (mrem/yr) ^c	Outdoor Worker (pCi/g) ^e	Residual Dose (mrem/yr) ^c	Residential (pCi/g) ^e	Residual Dose (mrem/yr) ^c	
Americium-241	100	100	18.7	5.67	0.8661	1.36	24.84	15
Cesium-137	5,000	5,000	1.72	0.113	0.2142	0.113	0.2561	119
Cobalt-60	5,000	5,000	6.01	0.0602	0.5164	0.0361	0.3918	100
Europium-152	5,000	5,000	3.21	0.13 ^f	0.5018	0.13 ^f	0.502	60
Europium-154	5,000	5,000	3.49	0.23 ^f	0.9593	0.23 ^f	0.9599	200
Plutonium-239	100	100	18.1	14.0	1.743	2.59	1.138	15
Radium-226	100	100	0.612	1.0 ^g	6.342	1.0 ^g	14.59	5 ⁱ
Strontium-90	1,000	1,000	0.685	10.8	0.1931	0.331	1.648	8
Thorium-232	1,000	36.5	24.9	2.7	24.91	1.69	25	15
Tritium	5,000	5,000	0.00053	4.23	0.00179	2.28	0.05263	20,000
Uranium-235+D	5,000	488	25	0.398	0.178	0.195	0.8453	30

Reference: Action Memorandum (DON 2006)

Notes:

- ^a These limits are based on AEC *Regulatory Guide 1.86* (AEC 1974). Limits for removable surface activity are 20 percent of these values.
- ^b These limits are based on 25 mrem/yr, using RESRAD-Building Version 3.3 or *Regulatory Guide 1.86* (AEC 1974), whichever is lower.
- ^c The resulting dose is based on modeling using RESRAD-Build Version 3.3 or RESRAD Version 6.3, with radon pathways turned off.
- ^d EPA PRGs for two future-use scenarios.
- ^e The on-site and off-site laboratory will ensure that the MDA meets the listed release criteria by increasing sample size or counting time as necessary. The MDA is defined as the lowest net response level, in counts, that can be seen with a fixed level of certainty, customarily 95 percent. The MDA is calculated per sample by considering background counts, amount of sample used, and counting time.
- ^f Based on EPA-decay-corrected PRGs for commercial reuse and a previous action memorandum (TtEMI 2000a, 2001).
- ^g Limit is 1 pCi/g above background, per agreement with EPA.
- ^h Release criteria for water have been derived from Radionuclides Notice of Data Availability Technical Document (EPA 2000) by comparing the limits from two criteria and using the most conservative limit.
- ⁱ Limit is for total radium concentration.

TABLE 2-1

RELEASE CRITERIA (ACTION MEMORANDUM)***Abbreviations and Acronyms:***

AEC – Atomic Energy Commission

cm² – square centimeter

dpm – disintegrations per minute

EPA – U.S. Environmental Protection Agency

MDA – minimum detectable activity

mrem/yr – millirems per year

pCi/g – picocuries per gram

pCi/L – picocuries per liter

PRG – preliminary remediation goal

TtEMI – Tetra Tech EM, Inc.

TABLE 2-2

PARCEL UC1 REMEDIATION GOALS FOR RADIONUCLIDES

Radionuclide	Surfaces (dpm/100 cm ²)		Soil (pCi/g)	Water (pCi/L)
	Equipment and Waste ^a	Structures ^b	Resident ^d	
Cesium-137	5,000	5,000	0.113	119
Cobalt-60	5,000	5,000	0.0361	100
Plutonium-239	100	100	2.59	15
Radium-226	100	100	1 ^c	5
Strontium-90	1,000	1,000	0.331	8
Thorium-232	1,000	37	1.69	15
Hydrogen-3	5,000	5,000	2.28	20,000
Uranium-235 + daughters	5,000	488	0.195	30

Reference : Table 5 of the Parcel D-1 and Parcel UC1 ROD (DON 2009a)

Notes:

^a Limits for removable surface activity are 20 percent of these values.

^b Remediation goals are consistent with those issued in the Action Memo (DON 2006). Remediation goals meet the 25 mrem/y residual dose level consisted with 10 CFR Section 20.1402. Furthermore, for most ROCs, goals meet the 15 mrem/y residual dose level consistent with the 1997 EPA OSWER Directive (OSWER No. 9200.4-18). Of exception, is the goal for Thorium-232, which because of detection limit technical limitations, corresponds to a dose of 25 mrem/y.

^c Goal is 1 pCi/g above background per agreement with EPA.

^d All radiologically impacted soils in this parcel will be remediated according to Residential Remediation Goals.

Abbreviations and Acronyms:

CFR – Code of Federal Regulations

cm² – square centimeter

DON – Department of the Navy

dpm – disintegration per minute

EPA – U.S. Environmental Protection Agency

mrem/y - millirem per year

OSWER – Office of Solid Waste and Emergency Response

pCi/g – picocuries per gram

pCi/l – picocuries per liter

ROC – radionuclide of concern

ROD – Record of Decision

Final Removal Action Completion Report

Parcels UC1 and UC2

Hunters Point Shipyard

DCN: ECSD-3211-0018-0174

CTO No. 0018

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PARCEL UC2 REMEDIATION GOALS FOR RADIONUCLIDES

Radionuclide ^a	Surfaces (dpm/100 cm ²)		Soil ^d (pCi/g)	Water (pCi/L)
	Equipment and Waste ^b	Structures ^c		
Cesium-137	5,000	5,000	0.113	119
Radium-226	100	100	1 ^e	5
Strontium-90	1,000	1,000	0.331	8

Reference : Table 5 of the Parcel UC2 ROD (DON 2009b)

Notes:

^a Unless otherwise stated, the radiological remediation goals in this table are based on total activity per sample including the background.

^b Limits for removable surface activity are 20 percent of these values.

^c Structures consist of storm drains and sanitary sewers. Remediation goals are consistent with those issued in the Action Memo (DON 2006). Remediation goals meet the 25 mrem/y residual dose level consisted with 10 CFR Section 20.1402. Furthermore, goals meet the 15 mrem/y residual dose level for most ROCs consistent with the 1997 EPA OSWER Directive (OSWER No. 9200.4-18).

^d All radiologically impacted soils will be remediated according to residential remediation goals.

^e Goal is 1 pCi/g above background per agreement with EPA.

Abbreviations and Acronyms:

CFR – Code of Federal Regulations

cm² – square centimeter

DON – Department of the Navy

dpm – disintegration per minute

EPA – U.S. Environmental Protection Agency

HPS – Hunters Point Shipyard

IR – Installation Restoration

mrem/y – millirem per year

OSWER – Office of Solid Waste and Emergency Response

pCi/g – picocuries per gram

pCi/l – picocuries per liter

ROD – Record of Decision

ROC – radionuclide of concern

TCRA – time-critical removal action

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TABLE 2-4

RELEASE CRITERIA (SURVEY UNIT PROJECT REPORT ABSTRACT)

Radionuclide	Soil			
	Outdoor Worker (pCi/g)	Residual Dose (mrem/yr) ^a	Residential (pCi/g)	Residual Dose (mrem/yr) ^a
Cesium-137	0.113	0.2142	0.113	0.2561
Radium-226	1.0 ^b	6.342	1.0 ^b	14.59
Strontium-90	10.8	0.1931	0.331	1.648

Reference: Table 2-2 of the SUPRA (TtEC 2010)

Notes:

^a The resulting dose is based on modeling using RESRAD Version 6.3, with radon pathways turned off.

^b Limit is 1 pCi/g above background, per agreement with EPA.

Abbreviations and Acronyms:

EPA – U.S. Environmental Protection Agency

mrem/yr – millrems per year

pCi/g – picocuries per gram

SUPRA – Survey Unit Project Report Abstract

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TABLE 3-1

PARCELS UC1 AND UC2 TRENCH SURVEY UNIT DATA SUMMARY

Parcel	Survey Unit ID No.	Associated Trench Segments	Surface Area (m ²)	Length (LF)	Total Soil Samples Collected	ROC	Elevated Soil Samples (pCi/g)	Total Soil Remediated (cy)	Survey Unit Backfill Data				Comments	Net Residual Dose/Risk	Recommendation
									Backfill Material Source	Estimated Backfill Volume (cy)	RASO Concurred	Date Backfill Completed			
UC1	133	02-D26-00-2G 02-D26-00-2H 02-D26-00-3F 02-D26-00-5B 02-D26-00-6I 02-D26-00-8B	806	344	39	Ra-226	1.7211	4	ES Unit 177 ES Unit 178 ES Unit 180 Imported Fill	1,227	27-Jul-09	03-Nov-09	Subsurface rock formation limited excavation to near vertical.	Modeling using the larger of the MDL or reported activity resulted in a net residual dose of 4.368 mrem/y with an increased cancer risk of 7.011×10^{-5} for the backfill material and 0.9894 mrem/y with an increased cancer risk of 1.290×10^{-5} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.
UC2	136	02-C15-00-1A 02-C15-00-1B 02-C15-00-1C	695	189	132	Ra-226	1.8073 1.6288 2.4008 1.5066 1.7869 1.8936 2.3072 3.3780 1.5977 2.1039 1.8099 2.2029 2.4145 1.6393 1.9170 2.0297 1.7198 1.6512 1.6445 1.8095 1.5561 1.6063 1.6987	203	ES Unit 193 ES Unit 194 ES Unit 196 ES Unit 197 ES Unit 202 ES Unit 203 Imported Fill	1,714	08-Sep-09	09-Oct-09	Subsurface rock formation limited excavation to near vertical.	Modeling using the larger of the MDL or reported activity resulted in a net residual dose of 3.946 mrem/y with an increased cancer risk of 6.373×10^{-5} for the backfill material and 4.301 mrem/y with an increased cancer risk of 7.008×10^{-5} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.

TABLE 3-1

PARCELS UC1 AND UC2 TRENCH SURVEY UNIT DATA SUMMARY

Parcel	Survey Unit ID No.	Associated Trench Segments	Surface Area (m ²)	Length (LF)	Total Soil Samples Collected	ROC	Elevated Soil Samples (pCi/g)	Total Soil Remediated (cy)	Survey Unit Backfill Data				Comments	Net Residual Dose/Risk	Recommendation
									Backfill Material Source	Estimated Backfill Volume (cy)	RASO Concurred	Date Backfill Completed			
UC2	137	02-C15-00-1C 02-C15-00-1D 02-C15-00-1E	896	234	18	NA	NA	NA	ES Unit 191 ES Unit 192 ES Unit 195 ES Unit 201 Imported Fill	1,228	28-Aug-09	12-Oct-09	Subsurface rock formation limited excavation to near vertical.	Dose and risk modeling using the larger of the MDL or reported activity resulted in a net residual dose of 5.576 mrem/y with an increased cancer risk of 8.821×10^{-5} for the backfill material and 3.099 mrem/y with an increased cancer risk of 4.687×10^{-5} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.
UC2	138	02-C15-00-1E	869	235	18	NA	NA	NA	ES Unit 207 ES Unit 208 ES Unit 209 Imported Fill	1,221	29-Jul-09	12-Oct-09	Subsurface rock formation limited excavation to near vertical.	Dose and risk modeling using the larger of the MDL or reported activity resulted in a net residual dose of 3.868 mrem/y with an increased cancer risk of 6.027×10^{-5} for the backfill material and 2.696 mrem/y with an increased cancer risk of 4.113×10^{-5} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.

TABLE 3-1

PARCELS UC1 AND UC2 TRENCH SURVEY UNIT DATA SUMMARY

Parcel	Survey Unit ID No.	Associated Trench Segments	Surface Area (m ²)	Length (LF)	Total Soil Samples Collected	ROC	Elevated Soil Samples (pCi/g)	Total Soil Remediated (cy)	Survey Unit Backfill Data				Comments	Net Residual Dose/Risk	Recommendation
									Backfill Material Source	Estimated Backfill Volume (cy)	RASO Concurred	Date Backfill Completed			
UC1	139	02-D26-00-1D 02-D26-00-1E 02-D26-00-1H 02-D26-00-2A 02-D26-00-2C 02-D26-00-3A 02-D26-00-3B 02-D26-00-3C 02-D26-00-3E 02-D26-00-3I 02-D26-00-8D	696	347	34	Ra-226	1.5045	2	ES Unit 185 ES Unit 186 ES Unit 187 ES Unit 190 ES Unit 198 Imported Fill	1,206	25-Aug-09	03-Nov-09	Thirteen investigative samples collected and analyzed due to presence of Cs-137 above the release limit in pipe sediment samples.	Dose and risk modeling using the larger of the MDL or reported activity resulted in a net residual dose of 3.701 mrem/y with an increased cancer risk of 5.967×10^{-5} for the backfill material and 2.772 mrem/y with an increased cancer risk of 4.348×10^{-5} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.
UC1	140	02-D26-00-1A 02-D26-001B 02-D26-00-1D 02-D26-00-1G 02-D26-00-1I 02-D26-00-2A 02-D26-00-3B 02-D26-00-8E	934	401	44	Cs-137	0.19605	3	ES Unit 200 ES Unit 224 Imported Fill	792	28-Aug-09	03-Nov-09	Five investigative samples collected and analyzed due to presence of Cs-137 above the release limit in pipe sediment samples.	Dose and risk modeling for SU140 using the larger of the MDL or reported activity resulted in a net residual dose of 4.463 mrem/y with an increased cancer risk of 6.896×10^{-5} for the backfill material and 2.51 mrem/y with an increased cancer risk of 3.735×10^{-5} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.

TABLE 3-1

PARCELS UC1 AND UC2 TRENCH SURVEY UNIT DATA SUMMARY

Parcel	Survey Unit ID No.	Associated Trench Segments	Surface Area (m ²)	Length (LF)	Total Soil Samples Collected	ROC	Elevated Soil Samples (pCi/g)	Total Soil Remediated (cy)	Survey Unit Backfill Data				Comments	Net Residual Dose/Risk	Recommendation
									Backfill Material Source	Estimated Backfill Volume (cy)	RASO Concurred	Date Backfill Completed			
UC2	141	02-C15-00-1E 02-C15-00-1F 02-C15-00-2F 02-C15-00-2G 02-C15-00-2H	827	302	18	NA	NA	NA	ES Unit 211 ES Unit 214 ES Unit 215 Imported Fill	1,180	11-Aug-09	12-Oct-09	Subsurface rock formation limited excavation to near vertical.	Dose and risk modeling for SU141 using the larger of the MDL or reported activity resulted in a net residual dose of 4.816 mrem/y with an increased cancer risk of 7.658×10^{-5} for the backfill material and 2.085 mrem/y with an increased cancer risk of 3.081×10^{-5} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.
UC2	142	02-C15-00-1F	951	269	18	NA	NA	NA	ES Unit 216 ES Unit 217 Imported Fill	1,451	26-Aug-09	12-Oct-09	Subsurface rock formation limited excavation to near vertical.	Dose and risk modeling for SU142 using the larger of the MDL or reported activity resulted in a net residual dose of 5.896 mrem/y with an increased risk of cancer of 9.278×10^{-5} for the backfill material and 2.315 mrem/y with an increased cancer risk of 3.367×10^{-5} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.

TABLE 3-1

PARCELS UC1 AND UC2 TRENCH SURVEY UNIT DATA SUMMARY

Parcel	Survey Unit ID No.	Associated Trench Segments	Surface Area (m ²)	Length (LF)	Total Soil Samples Collected	ROC	Elevated Soil Samples (pCi/g)	Total Soil Remediated (cy)	Survey Unit Backfill Data				Comments	Net Residual Dose/Risk	Recommendation
									Backfill Material Source	Estimated Backfill Volume (cy)	RASO Concurred	Date Backfill Completed			
UC2	143	02-C15-00-2D 02-C15-00-8E	330	473	45	NA	NA	NA	ES Unit 188	204	20-Aug-09	03-Nov-09	Twenty-seven investigative samples collected and analyzed due to presence of Ra-226 above the release limit in pipe sediment samples. No contamination identified in investigative samples.	Dose and risk modeling for SU143 using the larger of the MDL or reported activity resulted in a net residual dose of 2.522 mrem/y with an increased cancer risk of 4.414×10^{-5} for the backfill material and 1.589 mrem/y with an increased cancer risk of 2.705×10^{-5} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.
UC2	144	02-C15-00-2A 02-C15-00-2B 02-C15-00-2C 02-C15-00-2D 02-C15-00-2E 02-C15-00-2G 02-C15-00-8A	319	460	24	NA	NA	NA	ES Unit 210	195	20-Aug-09	12-Oct-09	Six investigative samples collected and analyzed due to presence of Ra-226 above the release limit in pipe sediment samples. No contamination identified in investigative samples.	Dose and risk modeling for SU144 using the larger of the MDL or reported activity resulted in a net residual dose of 2.052 mrem/y with an increased cancer risk of 3.565×10^{-5} for the backfill material and 0.9086 mrem/y with an increased cancer risk of 1.449×10^{-5} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.

TABLE 3-1

PARCELS UC1 AND UC2 TRENCH SURVEY UNIT DATA SUMMARY

Parcel	Survey Unit ID No.	Associated Trench Segments	Surface Area (m ²)	Length (LF)	Total Soil Samples Collected	ROC	Elevated Soil Samples (pCi/g)	Total Soil Remediated (cy)	Survey Unit Backfill Data				Comments	Net Residual Dose/Risk	Recommendation
									Backfill Material Source	Estimated Backfill Volume (cy)	RASO Concurred	Date Backfill Completed			
UC2	145	02-C15-00-1D 02-C15-00-8B	169	233	18	NA	NA	NA	ES Unit 212 Imported Fill	111	26-Aug-09	12-Oct-09	Subsurface rock formation limited excavation to near vertical.	Dose and risk modeling for SU145 using the larger of the MDL or reported activity resulted in a net residual dose of 1.678 mrem/y with an increased cancer risk of 3.169×10^{-5} for the backfill material and 1.202 mrem/y with an increased cancer risk of 2.188×10^{-5} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.
UC1	146	02-D26-00-2D 02-D26-00-2E 02-D26-00-3F 02-D26-00-5A 02-D26-00-8C	944	383	39	Cs-137	0.11931	3	ES Unit 179 ES Unit 183 ES Unit 227 Imported Fill	1,097	25-Aug-09	03-Nov-09	Subsurface rock formation limited excavation to near vertical.	Dose modeling for SU146 using the larger of the MDL or reported activity resulted in a net residual dose of 4.399 mrem/y with an increase in cancer risk of 6.771×10^{-5} for the backfill material and 0.6982 mrem/y with an increased cancer risk of 9.073×10^{-6} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.

TABLE 3-1

PARCELS UC1 AND UC2 TRENCH SURVEY UNIT DATA SUMMARY

Parcel	Survey Unit ID No.	Associated Trench Segments	Surface Area (m ²)	Length (LF)	Total Soil Samples Collected	ROC	Elevated Soil Samples (pCi/g)	Total Soil Remediated (cy)	Survey Unit Backfill Data				Comments	Net Residual Dose/Risk	Recommendation
									Backfill Material Source	Estimated Backfill Volume (cy)	RASO Concurred	Date Backfill Completed			
UC1	147	02-D26-00-2C 02-D26-00-2D 02-D26-00-4A 02-D26-00-4B 02-D26-00-4C 02-D26-00-4D 02-D26-00-8D	889	450	18	NA	NA	NA	ES Unit 181 ES Unit 184 ES Unit 189 Imported Fill	968	11-Sep-09	03-Nov-09	Subsurface rock formation limited excavation to near vertical.	Dose and risk modeling for SU147 using the larger of the MDL or reported activity resulted in a net residual dose of 3.906 mrem/y with an increased cancer risk of 6.039×10^{-5} for the backfill material and 0.9752 mrem/y with an increased cancer risk of 1.260×10^{-5} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.
UC1	148	02-C15-00-1H 02-D15-00-1J 02-D15-00-2A 02-D26-00-2A	612	164	109	Cs-137 Cs-137 Ra-226 Ra-226 Ra-226 Ra-226 Ra-226 Ra-226 Ra-226	0.12956 0.11682 2.0596 1.9861 1.5831 2.4577 2.5227 2.4857 1.6309	27	ES Unit 221 ES Unit 222 ES Unit 226 Imported Fill	1,036	14-Oct-09	03-Nov-09	Subsurface rock formation limited excavation to near vertical.	Dose and risk modeling for SU148 using the larger of the MDL or reported activity resulted in a net residual dose of 2.967 mrem/y with an increased cancer risk of 4.846×10^{-5} for the backfill material and 4.277 mrem/y with an increased cancer risk of 7.074×10^{-5} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.

TABLE 3-1

PARCELS UC1 AND UC2 TRENCH SURVEY UNIT DATA SUMMARY

Parcel	Survey Unit ID No.	Associated Trench Segments	Surface Area (m ²)	Length (LF)	Total Soil Samples Collected	ROC	Elevated Soil Samples (pCi/g)	Total Soil Remediated (cy)	Survey Unit Backfill Data				Comments	Net Residual Dose/Risk	Recommendation
									Backfill Material Source	Estimated Backfill Volume (cy)	RASO Concurred	Date Backfill Completed			
UC2	149	02-C15-00-1F 02-C15-00-1G 02-C15-00-1H 02-C15-00-2I	804	237	18	NA	NA	NA	ES Unit 230 Imported Fill	1,216	17-Sep-09	03-Nov-09	Subsurface rock formation limited excavation to near vertical.	Dose and risk modeling for SU149 using the larger of the MDL or reported activity resulted in a net residual dose of 5.335 mrem/y with an increased cancer risk of 8.629×10^{-5} for the backfill material and 3.036 mrem/y with an increased cancer risk of 4.813×10^{-5} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.
UC1	150	02-C15-00-4A 02-D15-00-1J 02-D15-00-4B 02-D15-00-4C 02-D15-00-8A 02-D26-00-1F 70-D17-00-3D 70-D17-00-3K 70-D17-00-8J	682	381	43	Ra-226	1.8161 3.3469 1.9737 1.8307 2.1284	14	ES Unit 228 ES Unit 232 ES Unit 233 Imported Fill	715	05-Oct-09	03-Nov-09	Eighteen investigative samples collected and analyzed due to presence of Cs-137 above the release limit in pipe sediment samples. No contamination identified in investigative samples.	Dose and risk modeling for SU150 using the larger of the MDL or reported activity resulted in a net residual dose of 3.537 mrem/y with an increased cancer risk of 5.756×10^{-5} for the backfill material and 2.354 mrem/y with an increased cancer risk of 3.759×10^{-5} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.

TABLE 3-1

PARCELS UC1 AND UC2 TRENCH SURVEY UNIT DATA SUMMARY

Parcel	Survey Unit ID No.	Associated Trench Segments	Surface Area (m ²)	Length (LF)	Total Soil Samples Collected	ROC	Elevated Soil Samples (pCi/g)	Total Soil Remediated (cy)	Survey Unit Backfill Data				Comments	Net Residual Dose/Risk	Recommendation
									Backfill Material Source	Estimated Backfill Volume (cy)	RASO Concurred	Date Backfill Completed			
UC1	164	03-D16-00-1E 03-D16-00-1F 03-D16-00-1G 03-D16-00-1K 03-D16-00-8A 03-D16-36-1J 03-D16-36-8A	512	306	39	Ra-226	1.8188	1	ES Unit 267 Imported Fill	437	28-Apr-10	11-May-10	Excavated under CTO 0003	Modeling using the larger of the MDL or reported activity resulted in a net residual dose of 3.164 mrem/y with an increased cancer risk of 5.377×10^{-5} for the backfill material and 0.6665 mrem/y with an increased cancer risk of 9.282×10^{-6} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.
UC1	167	03-D16-00-1A 03-D16-00-1H 03-D16-00-1I 02-D26-00-6I	422	153	18	NA	NA	NA	Imported Fill	493	06-May-10	11-May-10	Excavated under CTO 0003	Modeling using the larger of the MDL or reported activity resulted in a net residual dose of 4.163 mrem/y with an increased cancer risk of 7.322×10^{-5} for the backfill material and 1.403 mrem/y with an increased cancer risk of 2.335×10^{-5} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.
UC1	168	03-D16-00-1B 03-D16-00-1D 03-D16-00-1H 03-D16-00-8C	746	217	49	Cs-137	0.11864	2.5	ES Unit 272 ES Unit 276 Imported Fill	1,291	13-Jul-10	23-Jul-10	Excavated under CTO 0003	Modeling using the larger of the MDL or reported activity resulted in a net residual dose of 4.569 mrem/y with an increased cancer risk of 7.395×10^{-5} for the backfill material and 0.8457 mrem/y with an increased cancer risk of 1.095×10^{-5} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.

TABLE 3-1

PARCELS UC1 AND UC2 TRENCH SURVEY UNIT DATA SUMMARY

Parcel	Survey Unit ID No.	Associated Trench Segments	Surface Area (m ²)	Length (LF)	Total Soil Samples Collected	ROC	Elevated Soil Samples (pCi/g)	Total Soil Remediated (cy)	Survey Unit Backfill Data				Comments	Net Residual Dose/Risk	Recommendation
									Backfill Material Source	Estimated Backfill Volume (cy)	RASO Concurred	Date Backfill Completed			
UC1	171	03-D16-00-1A 03-D16-00-1C 03-D16-00-1E 03-D16-00-8B	761	363	57	Cs-137	0.11564	3	Imported Fill	640	14-Jul-10	23-Jul-10	Excavated under CTO 0003. A second set of 18 systematic soil samples were collected due to the discovery of an additional section of trench segment 03-D16-00-1E.	Modeling using the larger of the MDL or reported activity resulted in a net residual dose of 5.702 mrem/y with an increased cancer risk of 9.317×10^{-5} for the backfill material and 0.869 mrem/y with an increased cancer risk of 1.128×10^{-5} for the trench unit.	Based on the modeled net residual dose/risk, and because the results were less than the EPA criterion of 3×10^{-4} , no further action was recommended.

Abbreviations and Acronyms:
Cs-137 – cesium-137
cy – cubic yard
EPA – U.S. Environmental Protection Agency
LF – linear feet
m² – square meter
MDL – method detection limit
mrem/y – millirems per year
NA – not applicable
pCi/g – picocuries per gram
Ra-226 – radium-226
RASO – Radiological Affairs Support Office
ROC – radionuclide of concern

TABLE 3-2

PARCELS UC1 AND UC2 SURVEY UNITS AND ASSOCIATED TRENCH SEGMENT DATA

Parcel	Survey Unit	Trench Segment Identification No.	Type of Segment	Pipe Material	Diameter of Pipe (inches)	Maximum Depth of Trench (feet)	Minimum Depth of Trench (feet)	Maximum Depth of Pipe (feet)	Minimum Depth of Pipe (feet)
UC1	133	02-D26-00-2G	Sanitary	Concrete	33	16.00	14.00	13.25	11.25
UC1	133	02-D26-00-2H	Sanitary	Concrete	24	17.00	15.00	15.00	13.00
UC1	133	02-D26-00-3F	Sanitary	Concrete	33	17.00	15.00	14.25	12.25
UC1	133	02-D26-00-5B	Sanitary	VCP	6	15.00	5.00	14.50	4.50
UC1	133	02-D26-00-6I	Sanitary	VCP	24	14.00	12.00	12.00	10.00
UC1	133	02-D26-00-8B	Sanitary	VCP	6	17.00	15.00	16.50	14.50
UC2	136	02-C15-00-1A	Sanitary	Concrete	21	21.00	19.00	19.25	17.25
UC2	136	02-C15-00-1B	Sanitary	Concrete	12	21.00	19.00	20.00	18.00
UC2	136	02-C15-00-1C	Sanitary	Concrete	21	18.00	15.00	16.25	13.25
UC2	137	02-C15-00-1C	Sanitary	Concrete	21	18.00	15.00	16.25	13.25
UC2	137	02-C15-00-1D	Sanitary	Concrete	12	18.00	15.00	17.00	14.00
UC2	137	02-C15-00-1E	Sanitary	Concrete	21	18.00	15.00	16.25	13.25
UC2	138	02-C15-00-1E	Sanitary	Concrete	21	17.00	16.00	15.25	14.25
UC1	139	02-D26-00-1D	Storm	CIP	8	3.00	3.00	2.33	2.33
UC1	139	02-D26-00-1E	Storm	Concrete	12	12.00	10.00	11.00	9.00
UC1	139	02-D26-00-1H	Storm	VCP	12	10.00	6.00	9.00	5.00
UC1	139	02-D26-00-2A	Sanitary	Concrete	33	15.00	13.00	12.25	10.25
UC1	139	02-D26-00-2C	Sanitary	Concrete	33	15.00	13.00	12.25	10.25
UC1	139	02-D26-00-3A	Sanitary	CIP	8	4.00	3.00	3.33	2.33
UC1	139	02-D26-00-3B	Sanitary	CIP	8	4.00	3.00	3.33	2.33
UC1	139	02-D26-00-3C	Sanitary	CIP	8	6.00	3.00	5.33	2.33
UC1	139	02-D26-00-3E	Sanitary	UNK	10	15.00	12.00	14.17	11.17
UC1	139	02-D26-00-3I	Storm	CMP	8	2.00	2.00	1.33	1.33
UC1	139	02-D26-00-8D	Sanitary	VCP	6	10.00	8.00	9.50	7.50
UC1	140	02-D26-00-1A	Storm	Concrete	12	5.00	4.00	4.00	3.00
UC1	140	02-D26-00-1D	Storm	CIP	8	3.00	3.00	2.33	2.33
UC1	140	02-D26-00-1G	Storm	UNK	10	3.00	2.00	2.17	1.17
UC1	140	02-D26-00-1I	Storm	CMP	8	5.00	3.00	4.33	2.33
UC1	140	02-D26-00-2A	Sanitary	Concrete	33	15.00	13.00	12.25	10.25
UC1	140	02-D26-00-3B	Sanitary	CIP	8	4.00	3.00	3.33	2.33
UC1	140	02-D26-00-8E	Sanitary	VCP	6	15.00	13.00	14.50	12.50
UC2	141	02-C15-00-1E	Sanitary	Concrete	21	16.00	15.00	14.25	13.25
UC2	141	02-C15-00-1F	Sanitary	Concrete	21	16.00	15.00	14.25	13.25
UC2	141	02-C15-00-2F	Storm	Concrete	18	16.00	15.00	14.50	13.50

TABLE 3-2

PARCELS UC1 AND UC2 SURVEY UNITS AND ASSOCIATED TRENCH SEGMENT DATA

Parcel	Survey Unit	Trench Segment Identification No.	Type of Segment	Pipe Material	Diameter of Pipe (inches)	Maximum Depth of Trench (feet)	Minimum Depth of Trench (feet)	Maximum Depth of Pipe (feet)	Minimum Depth of Pipe (feet)
UC2	141	02-C15-00-2G	Storm	Concrete	12	7.00	6.00	6.00	5.00
UC2	141	02-C15-00-2H	Storm	Concrete	15	8.00	8.00	6.75	6.75
UC2	142	02-C15-00-1F	Sanitary	Concrete	21	16.00	15.00	14.25	13.25
UC2	143	02-C15-00-2D	Storm	VCP	8	3.00	2.00	2.33	1.33
UC2	143	02-C15-00-8E	Storm	VCP	8	3.00	3.00	2.33	2.33
UC2	144	02-C15-00-2A	Storm	VCP	6	3.00	2.00	2.50	1.50
UC2	144	02-C15-00-2D	Storm	VCP	8	3.00	2.00	2.33	1.33
UC2	144	02-C15-00-2G	Storm	Concrete	12	7.00	6.00	6.00	5.00
UC2	144	02-C15-00-8A	Storm	VCP	4	3.00	3.00	2.67	2.42
UC2	145	02-C15-00-1D	Sanitary	Concrete	12	18.00	15.00	17.00	14.00
UC2	145	02-C15-00-8B	Storm	VCP	6	2.00	2.00	1.50	1.50
UC1	146	02-D26-00-2D	Sanitary	Concrete	33	17.00	15.00	14.25	12.25
UC1	146	02-D26-00-2E	Sanitary	VCP	10	15.00	8.00	14.17	7.17
UC1	146	02-D26-00-3F	Sanitary	Concrete	33	17.00	15.00	14.25	12.25
UC1	146	02-D26-00-5A	Storm	Concrete	15	12.00	7.00	10.75	5.75
UC1	146	02-D26-00-8C	Sanitary	VCP	6	10.00	8.00	9.50	7.50
UC1	147	02-D26-00-2C	Sanitary	Concrete	33	13.00	13.00	10.25	10.25
UC1	147	02-D26-00-2D	Sanitary	Concrete	33	15.00	13.00	12.25	10.25
UC1	147	02-D26-00-4A	Storm	VCP	10	6.00	4.00	5.17	3.17
UC1	147	02-D26-00-4B	Storm	Concrete	10	4.00	3.00	3.17	2.17
UC1	147	02-D26-00-4C	Storm	Concrete	10	5.00	4.00	4.17	3.17
UC1	147	02-D26-00-4D	Storm	VCP	10	5.00	4.00	4.17	3.17
UC1	147	02-D26-00-8D	Sanitary	VCP	6	10.00	8.00	9.50	7.50
UC1	148	02-C15-00-1H	Sanitary	Concrete	24	17.00	15.00	15.00	13.00
UC1	148	02-D15-00-1J	Sanitary	Concrete	21	17.00	15.00	15.25	13.25
UC1	148	02-D15-00-2A	Sanitary	Concrete	33	17.00	15.00	14.25	12.25
UC1	148	02-D26-00-2A	Sanitary	Concrete	33	17.00	15.00	14.25	12.25
UC2	149	02-C15-00-1F	Sanitary	Concrete	21	16.00	15.00	14.25	13.25
UC2	149	02-C15-00-1G	Sanitary	Concrete	21	16.00	15.00	14.25	13.25
UC2	149	02-C15-00-1H	Sanitary	Concrete	24	16.00	15.00	14.00	13.00
UC2	149	02-C15-00-2I	Storm	VCP	18	5.00	4.00	3.50	2.50
UC1	150	02-C15-00-4A	Storm	Concrete	24	7.00	6.00	5.00	4.00
UC1	150	02-D15-00-1J	Sanitary	Concrete	21	10.00	8.00	8.25	6.25
UC1	150	02-D15-00-4B	Storm	Concrete	24	9.00	6.00	7.00	4.00

PARCELS UC1 AND UC2 SURVEY UNITS AND ASSOCIATED TRENCH SEGMENT DATA

Parcel	Survey Unit	Trench Segment Identification No.	Type of Segment	Pipe Material	Diameter of Pipe (inches)	Maximum Depth of Trench (feet)	Minimum Depth of Trench (feet)	Maximum Depth of Pipe (feet)	Minimum Depth of Pipe (feet)
UC1	150	02-D15-00-4C	Storm	Concrete	21	10.00	7.00	8.25	5.25
UC1	150	02-D15-00-8A	Storm	VCP	6	9.00	6.00	8.50	5.50
UC1	150	02-D26-00-1F	Storm	Concrete	21	10.00	7.00	8.25	5.25
UC1	150	70-D17-00-3D	Sanitary	Concrete	21	9.00	8.00	7.25	6.25
UC1	150	70-D17-00-3K	Storm	Concrete	24	9.00	6.00	7.00	4.00
UC1	150	70-D17-00-8J	Storm	VCP	6	9.00	6.00	8.50	5.50
UC1	164	03-D16-00-1E	Storm	VCP	15	9.00	7.00	7.75	5.75
UC1	164	03-D16-00-1F	Storm	VCP	4	5.00	4.00	4.67	3.67
UC1	164	03-D16-00-1G	Storm	VCP	12	5.00	4.00	4.00	3.00
UC1	164	03-D16-00-1K	Sanitary	VCP	8	6.50	6.00	5.83	5.33
UC1	164	03-D16-00-8A	Storm	VCP	15	9.00	8.00	7.75	6.75
UC1	164	03-D16-36-1J	Sanitary	VCP	8	6.50	6.00	5.83	5.33
UC1	164	03-D16-36-8A	Sanitary	CIP	4	5.00	4.00	4.67	3.67
UC1	167	03-D16-00-1A	Storm	Concrete	10	10.00	10.00	9.17	9.17
UC1	167	03-D16-00-1H	Sanitary	Concrete	24	10.00	10.00	8.00	8.00
UC1	167	03-D16-00-1I	Sanitary	Concrete	24	12.00	11.00	10.00	9.00
UC1	168	03-D16-00-1B	Sanitary	VCP	10	13.00	12.00	12.17	11.17
UC1	168	03-D16-00-1D	Sanitary	Concrete	24	20.00	19.00	18.00	17.00
UC1	168	03-D16-00-1H	Sanitary	Concrete	24	12.00	10.00	10.00	8.00
UC1	168	03-D16-00-8C	Sanitary	VCP	8	12.00	12.00	11.33	11.33
UC1	171	03-D16-00-1A	Storm	Concrete	10	8.00	8.00	7.17	7.17
UC1	171	03-D16-00-1C	Sanitary	Concrete	24	16.00	16.00	14.00	14.00
UC1	171	03-D16-00-1E	Storm	VCP	15	9.00	7.00	7.75	5.75
UC1	171	03-D16-00-8B	Sanitary	VCP	8	3.00	3.00	2.33	2.33

Abbreviations and Acronyms:

CIP – cast iron pipe

CMP – corrugated metal pipe

UNK – unknown

VCP – vitreous clay pipe

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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	133	02-D26-00-2G	1	00	C20	0178	27-Mar-09
UC1	133	02-D26-00-2G	2	00	C20	0178	27-Mar-09
UC1	133	02-D26-00-2G	3	00	C20	0178	27-Mar-09
UC1	133	02-D26-00-2G	4	00	C20	0178	27-Mar-09
UC1	133	02-D26-00-2G	5	00	C20	0178	27-Mar-09
UC1	133	02-D26-00-2G	6	00	C20	0178	27-Mar-09
UC1	133	02-D26-00-2G	7	00	C20	0178	27-Mar-09
UC1	133	02-D26-00-2G	8	00	C20	0178	27-Mar-09
UC1	133	02-D26-00-2G	9	00	C20	0178	27-Mar-09
UC1	133	02-D26-00-2G	10	00	C20	0178	27-Mar-09
UC1	133	02-D26-00-2G	11	00	C20	0178	27-Mar-09
UC1	133	02-D26-00-2G	12	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-2G	13	00	C21	0179	31-Mar-09
UC1	133	02-D26-00-2G	14	00	C21	0179	31-Mar-09
UC1	133	02-D26-00-2G	15	00	C21	0179	31-Mar-09
UC1	133	02-D26-00-2G	16	00	C21	0179	31-Mar-09
UC1	133	02-D26-00-2G	17	00	C21	0179	31-Mar-09
UC1	133	02-D26-00-2G	18	00	C21	0179	31-Mar-09
UC1	133	02-D26-00-2G	19	00	C21	0179	31-Mar-09
UC1	133	02-D26-00-2G	20	00	C21	0179	31-Mar-09
UC1	133	02-D26-00-2G	21	00	C21	0179	31-Mar-09
UC1	133	02-D26-00-2G	22	00	C21	0179	31-Mar-09
UC1	133	02-D26-00-2G	23	00	C21	0179	31-Mar-09
UC1	133	02-D26-00-2G	24	00	C21	0179	31-Mar-09
UC1	133	02-D26-00-2G	25	00	C21	0179	31-Mar-09
UC1	133	02-D26-00-2G	26	00	C21	0179	31-Mar-09
UC1	133	02-D26-00-2H	1	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-2H	2	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-2H	3	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-2H	4	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-2H	5	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-2H	6	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-2H	7	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-2H	8	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-2H	9	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-2H	10	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-2H	11	00	C19	0177	26-Mar-09

Final Removal Action Completion Report
 Parcels UC1 and UC2
 Hunters Point Shipyard
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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	133	02-D26-00-2H	12	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-2H	13	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-2H	14	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-2H	15	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-2H	16	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-2H	17	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-2H	18	00	C19	0177	27-Mar-09
UC1	133	02-D26-00-2H	19	00	C19	0177	27-Mar-09
UC1	133	02-D26-00-2H	20	00	C19	0177	27-Mar-09
UC1	133	02-D26-00-2H	21	00	C19	0177	27-Mar-09
UC1	133	02-D26-00-2H	22	00	C20	0178	27-Mar-09
UC1	133	02-D26-00-2H	23	00	C20	0178	27-Mar-09
UC1	133	02-D26-00-2H	24	00	C20	0178	30-Mar-09
UC1	133	02-D26-00-2H	25	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-2H	26	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-2H	27	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-2H	28	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-2H	29	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-2H	30	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-2H	31	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-2H	32	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-2H	33	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-2H	34	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-2H	35	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-2H	36	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-2H	37	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-2H	38	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-2H	39	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-2H	40	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-2H	41	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-2H	42	00	C21	0179	30-Mar-09
UC1	133	02-D26-00-3F	1	00	C21	0179	1-Apr-09
UC1	133	02-D26-00-3F	2	00	C21	0179	1-Apr-09
UC1	133	02-D26-00-3F	3	00	C21	0179	1-Apr-09
UC1	133	02-D26-00-3F	4	00	C22	0180	1-Apr-09
UC1	133	02-D26-00-3F	5	00	C22	0180	1-Apr-09
UC1	133	02-D26-00-3F	6	00	C22	0180	1-Apr-09

Final Removal Action Completion Report
 Parcels UC1 and UC2
 Hunters Point Shipyard
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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	133	02-D26-00-3F	7	00	C22	0180	1-Apr-09
UC1	133	02-D26-00-3F	8	00	C22	0180	1-Apr-09
UC1	133	02-D26-00-3F	9	00	C22	0180	1-Apr-09
UC1	133	02-D26-00-3F	10	00	C22	0180	1-Apr-09
UC1	133	02-D26-00-3F	11	00	C22	0180	1-Apr-09
UC1	133	02-D26-00-3F	12	00	C22	0180	1-Apr-09
UC1	133	02-D26-00-3F	13	00	C22	0180	1-Apr-09
UC1	133	02-D26-00-3F	14	00	C22	0180	1-Apr-09
UC1	133	02-D26-00-3F	15	00	C22	0180	1-Apr-09
UC1	133	02-D26-00-3F	16	00	C22	0180	1-Apr-09
UC1	133	02-D26-00-3F	17	00	C22	0180	1-Apr-09
UC1	133	02-D26-00-3F	18	00	C22	0180	1-Apr-09
UC1	133	02-D26-00-3F	19	00	C22	0180	1-Apr-09
UC1	133	02-D26-00-3F	20	00	C23	0181	3-Apr-09
UC1	133	02-D26-00-3F	21	00	C23	0181	3-Apr-09
UC1	133	02-D26-00-3F	22	00	C23	0181	3-Apr-09
UC1	133	02-D26-00-3F	23	00	C23	0181	3-Apr-09
UC1	133	02-D26-00-3F	24	00	C23	0181	3-Apr-09
UC1	133	02-D26-00-3F	25	00	C23	0181	3-Apr-09
UC1	133	02-D26-00-3F	26	00	C23	0181	3-Apr-09
UC1	133	02-D26-00-3F	27	00	C23	0181	3-Apr-09
UC1	133	02-D26-00-3F	28	00	C23	0181	3-Apr-09
UC1	133	02-D26-00-3F	29	00	C23	0181	3-Apr-09
UC1	133	02-D26-00-3F	30	00	C23	0181	3-Apr-09
UC1	133	02-D26-00-3F	31	00	C23	0181	3-Apr-09
UC1	133	02-D26-00-3F	32	00	C23	0181	3-Apr-09
UC1	133	02-D26-00-3F	33	00	C23	0181	3-Apr-09
UC1	133	02-D26-00-3F	34	00	C23	0181	3-Apr-09
UC1	133	02-D26-00-3F	35	00	C23	0181	3-Apr-09
UC1	133	02-D26-00-3F	36	00	C23	0181	3-Apr-09
UC1	133	02-D26-00-3F	37	00	C23	0181	3-Apr-09
UC1	133	02-D26-00-5B	1	00	C20	0178	27-Mar-09
UC1	133	02-D26-00-5B	2	00	C20	0178	27-Mar-09
UC1	133	02-D26-00-5B	3	00	C20	0178	27-Mar-09
UC1	133	02-D26-00-5B	4	00	C20	0178	27-Mar-09
UC1	133	02-D26-00-5B	5	00	C20	0178	27-Mar-09
UC1	133	02-D26-00-5B	6	00	C20	0178	27-Mar-09

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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	133	02-D26-00-5B	7	00	C20	0178	30-Mar-09
UC1	133	02-D26-00-5B	8	00	C20	0178	30-Mar-09
UC1	133	02-D26-00-5B	9	00	C20	0178	30-Mar-09
UC1	133	02-D26-00-5B	10	00	C20	0178	30-Mar-09
UC1	133	02-D26-00-5B	11	00	C20	0178	30-Mar-09
UC1	133	02-D26-00-5B	12	00	C20	0178	30-Mar-09
UC1	133	02-D26-00-5B	13	00	C20	0178	30-Mar-09
UC1	133	02-D26-00-5B	14	00	C20	0178	30-Mar-09
UC1	133	02-D26-00-5B	15	00	C20	0178	30-Mar-09
UC1	133	02-D26-00-5B	16	00	C20	0178	30-Mar-09
UC1	133	02-D26-00-5B	17	00	C20	0178	30-Mar-09
UC1	133	02-D26-00-5B	18	00	C20	0178	30-Mar-09
UC1	133	02-D26-00-5B	19	00	C21	0179	31-Mar-09
UC1	133	02-D26-00-5B	20	00	C21	0179	31-Mar-09
UC1	133	02-D26-00-6I	1	00	C19	0177	25-Mar-09
UC1	133	02-D26-00-6I	2	00	C19	0177	25-Mar-09
UC1	133	02-D26-00-6I	3	00	C19	0177	25-Mar-09
UC1	133	02-D26-00-6I	4	00	C19	0177	25-Mar-09
UC1	133	02-D26-00-6I	5	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-6I	6	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-6I	7	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-6I	8	00	C19	0177	26-Mar-09
UC1	133	02-D26-00-6I	9	00	C19	0177	26-Mar-09
UC2	136	02-C15-00-1A	1	00	C32	0188	22-Apr-09
UC2	136	02-C15-00-1A	2	00	C32	0188	22-Apr-09
UC2	136	02-C15-00-1A	3	00	C32	0188	22-Apr-09
UC2	136	02-C15-00-1A	4	00	C32	0188	22-Apr-09
UC2	136	02-C15-00-1A	5	00	C32	0188	22-Apr-09
UC2	136	02-C15-00-1A	6	00	C32	0188	22-Apr-09
UC2	136	02-C15-00-1A	7	00	C32	0188	22-Apr-09
UC2	136	02-C15-00-1A	8	00	C32	0188	23-Apr-09
UC2	136	02-C15-00-1A	9	00	C32	0188	23-Apr-09
UC2	136	02-C15-00-1A	10	00	C32	0188	23-Apr-09
UC2	136	02-C15-00-1A	11	00	C32	0188	23-Apr-09
UC2	136	02-C15-00-1A	12	00	C32	0188	23-Apr-09
UC2	136	02-C15-00-1A	13	00	C32	0188	23-Apr-09
UC2	136	02-C15-00-1A	14	00	C32	0188	23-Apr-09

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 Parcels UC1 and UC2
 Hunters Point Shipyard
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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	136	02-C15-00-1A	15	00	C32	0188	23-Apr-09
UC2	136	02-C15-00-1A	16	00	C32	0188	23-Apr-09
UC2	136	02-C15-00-1A	17	00	C32	0188	23-Apr-09
UC2	136	02-C15-00-1A	18	00	C37	0193	28-Apr-09
UC2	136	02-C15-00-1A	19	00	C37	0193	28-Apr-09
UC2	136	02-C15-00-1A	20	00	C37	0193	28-Apr-09
UC2	136	02-C15-00-1A	21	00	C37	0193	28-Apr-09
UC2	136	02-C15-00-1A	22	00	C37	0193	28-Apr-09
UC2	136	02-C15-00-1A	23	00	C37	0193	28-Apr-09
UC2	136	02-C15-00-1A	24	00	C37	0193	28-Apr-09
UC2	136	02-C15-00-1A	25	00	C37	0193	28-Apr-09
UC2	136	02-C15-00-1A	26	00	C37	0193	28-Apr-09
UC2	136	02-C15-00-1A	27	00	C37	0193	28-Apr-09
UC2	136	02-C15-00-1A	28	00	C37	0193	28-Apr-09
UC2	136	02-C15-00-1A	29	00	C37	0193	28-Apr-09
UC2	136	02-C15-00-1A	30	00	C02	0194	28-Apr-09
UC2	136	02-C15-00-1A	31	00	C02	0194	28-Apr-09
UC2	136	02-C15-00-1A	32	00	C02	0194	28-Apr-09
UC2	136	02-C15-00-1A	33	00	C37	0193	28-Apr-09
UC2	136	02-C15-00-1A	34	00	C37	0193	28-Apr-09
UC2	136	02-C15-00-1A	35	00	C02	0194	28-Apr-09
UC2	136	02-C15-00-1A	36	00	C02	0194	28-Apr-09
UC2	136	02-C15-00-1A	37	00	C02	0194	28-Apr-09
UC2	136	02-C15-00-1A	38	00	C02	0194	28-Apr-09
UC2	136	02-C15-00-1A	39	00	C02	0194	28-Apr-09
UC2	136	02-C15-00-1A	40	00	C02	0194	28-Apr-09
UC2	136	02-C15-00-1A	41	00	C02	0194	28-Apr-09
UC2	136	02-C15-00-1A	42	00	C02	0194	28-Apr-09
UC2	136	02-C15-00-1A	43	00	C02	0194	28-Apr-09
UC2	136	02-C15-00-1A	44	00	C02	0194	28-Apr-09
UC2	136	02-C15-00-1A	45	00	C02	0194	28-Apr-09
UC2	136	02-C15-00-1C	1	00	C32	0188	23-Apr-09
UC2	136	02-C15-00-1C	2	00	C32	0188	23-Apr-09
UC2	136	02-C15-00-1C	3	00	C32	0188	23-Apr-09
UC2	136	02-C15-00-1C	4	00	C32	0188	23-Apr-09
UC2	136	02-C15-00-1C	5	00	C32	0188	23-Apr-09
UC2	136	02-C15-00-1C	6	00	C32	0188	23-Apr-09

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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	136	02-C15-00-1C	7	00	C32	0188	23-Apr-09
UC2	136	02-C15-00-1C	8	00	C32	0188	23-Apr-09
UC2	136	02-C15-00-1C	9	00	C32	0188	23-Apr-09
UC2	136	02-C15-00-1C	10	00	C32	0188	23-Apr-09
UC2	136	02-C15-00-1C	11	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	12	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	13	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	14	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	15	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	16	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	17	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	18	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	19	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	20	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	21	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	22	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	23	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	24	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	25	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	26	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	27	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	28	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	29	00	C34	0191	23-Apr-09
UC2	136	02-C15-00-1C	30	00	C34	0191	24-Apr-09
UC2	136	02-C15-00-1C	31	00	C34	0191	24-Apr-09
UC2	136	02-C15-00-1C	32	00	C34	0191	24-Apr-09
UC2	136	02-C15-00-1C	33	00	C34	0191	24-Apr-09
UC2	136	02-C15-00-1C	34	00	C34	0191	27-Apr-09
UC2	136	02-C15-00-1C	35	00	C34	0191	27-Apr-09
UC2	136	02-C15-00-1C	36	00	C34	0191	27-Apr-09
UC2	136	02-C15-00-1C	37	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	38	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	39	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	40	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	41	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	42	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	43	00	C36	0192	27-Apr-09

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 Parcels UC1 and UC2
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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	136	02-C15-00-1C	44	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	45	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	46	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	47	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	48	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	49	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	50	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	51	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	52	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	53	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	54	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	55	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	56	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	57	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	58	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	59	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	60	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	61	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	62	00	C36	0192	27-Apr-09
UC2	136	02-C15-00-1C	63	00	C37	0193	27-Apr-09
UC2	136	02-C15-00-1C	64	00	C37	0193	27-Apr-09
UC2	136	02-C15-00-1C	65	00	C37	0193	27-Apr-09
UC2	136	02-C15-00-1C	66	00	C37	0193	27-Apr-09
UC2	136	02-C15-00-1C	67	00	C37	0193	27-Apr-09
UC2	136	02-C15-00-1C	68	00	C37	0193	27-Apr-09
UC2	136	02-C15-00-1C	69	00	C37	0193	27-Apr-09
UC2	136	02-C15-00-1C	70	00	C37	0193	27-Apr-09
UC2	136	02-C15-00-1C	71	00	C37	0193	27-Apr-09
UC2	136	02-C15-00-1C	72	00	C37	0193	27-Apr-09
UC2	136	02-C15-00-1C	73	00	C37	0193	27-Apr-09
UC2	136	02-C15-00-1C	74	00	C37	0193	27-Apr-09
UC2	136	02-C15-00-1C	75	00	C02	0194	29-Apr-09
UC2	136	02-C15-00-1C	76	00	C02	0194	29-Apr-09
UC2	136	02-C15-00-1C	77	00	C02	0194	29-Apr-09
UC2	136	02-C15-00-1C	78	00	C02	0194	29-Apr-09
UC2	136	02-C15-00-1C	79	00	C02	0194	29-Apr-09
UC2	136	02-C15-00-1C	80	00	C02	0194	29-Apr-09

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 Parcels UC1 and UC2
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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	136	02-C15-00-1C	81	00	C02	0194	29-Apr-09
UC2	136	02-C15-00-1C	82	00	C02	0194	29-Apr-09
UC2	136	02-C15-00-1C	83	00	C02	0194	29-Apr-09
UC2	136	02-C15-00-1C	84	00	C02	0194	29-Apr-09
UC2	136	02-C15-00-1C	85	00	C02	0194	29-Apr-09
UC2	136	02-C15-00-1C	86	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	87	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	88	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	89	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	90	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	91	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	92	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	93	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	94	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	95	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	96	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	97	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	98	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	99	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	100	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	101	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	102	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	103	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	104	00	C03	0195	29-Apr-09
UC2	136	02-C15-00-1C	105	00	C03	0195	29-Apr-09
UC2	137	02-C15-00-1C	106	00	C03	0195	30-Apr-09
UC2	137	02-C15-00-1C	107	00	C03	0195	30-Apr-09
UC2	137	02-C15-00-1C	108	00	C03	0195	30-Apr-09
UC2	137	02-C15-00-1C	109	00	C03	0195	30-Apr-09
UC2	137	02-C15-00-1C	110	00	C03	0195	30-Apr-09
UC2	137	02-C15-00-1C	111	00	C03	0195	30-Apr-09
UC2	137	02-C15-00-1C	112	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	113	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	114	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	115	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	116	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	117	00	C04	0196	30-Apr-09

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 Parcels UC1 and UC2
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PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	137	02-C15-00-1C	118	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	119	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	120	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	121	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	122	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	123	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	124	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	125	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	126	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	127	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	128	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	129	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	130	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	131	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	132	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	133	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	134	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	135	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	136	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	137	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	138	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	139	00	C04	0196	30-Apr-09
UC2	137	02-C15-00-1C	140	00	C05	0197	30-Apr-09
UC2	137	02-C15-00-1C	141	00	C05	0197	30-Apr-09
UC2	137	02-C15-00-1C	142	00	C05	0197	30-Apr-09
UC2	137	02-C15-00-1C	143	00	C05	0197	30-Apr-09
UC2	137	02-C15-00-1C	144	00	C05	0197	6-May-09
UC2	137	02-C15-00-1C	145	00	C05	0197	6-May-09
UC2	137	02-C15-00-1C	146	00	C05	0197	6-May-09
UC2	137	02-C15-00-1C	147	00	C05	0197	6-May-09
UC2	137	02-C15-00-1C	148	00	C05	0197	7-May-09
UC2	137	02-C15-00-1C	149	00	C05	0197	7-May-09
UC2	137	02-C15-00-1C	150	00	C05	0197	7-May-09
UC2	137	02-C15-00-1C	151	00	C05	0197	7-May-09
UC2	137	02-C15-00-1C	152	00	C05	0197	7-May-09
UC2	137	02-C15-00-1C	153	00	C05	0197	7-May-09
UC2	137	02-C15-00-1C	154	00	C05	0197	7-May-09

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PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	137	02-C15-00-1C	155	00	C05	0197	7-May-09
UC2	137	02-C15-00-1C	156	00	C05	0197	7-May-09
UC2	137	02-C15-00-1C	157	00	C05	0197	7-May-09
UC2	137	02-C15-00-1C	158	00	C05	0197	7-May-09
UC2	137	02-C15-00-1C	159	00	C05	0197	7-May-09
UC2	137	02-C15-00-1C	160	00	C05	0197	7-May-09
UC2	137	02-C15-00-1C	161	00	C05	0197	7-May-09
UC2	137	02-C15-00-1C	162	00	C05	0197	7-May-09
UC2	137	02-C15-00-1C	163	00	C05	0197	7-May-09
UC2	137	02-C15-00-1C	164	00	C05	0197	7-May-09
UC2	137	02-C15-00-1C	165	00	C05	0197	7-May-09
UC2	137	02-C15-00-1C	166	00	C05	0197	7-May-09
UC2	137	02-C15-00-1C	167	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	168	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	169	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	170	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	171	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	172	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	173	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	174	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	175	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	176	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	177	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	178	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	179	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	180	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	181	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	182	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	183	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	184	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	185	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	186	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	187	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	188	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	189	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	190	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	191	00	C10	0201	7-May-09

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PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	137	02-C15-00-1C	192	00	C10	0201	7-May-09
UC2	137	02-C15-00-1C	193	00	C11	0202	7-May-09
UC2	137	02-C15-00-1C	194	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	195	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	196	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	197	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	198	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	199	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	200	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	201	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	202	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	203	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	204	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	205	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	206	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	207	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	208	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	209	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	210	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	211	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	212	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	213	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	214	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	215	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	216	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	217	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	218	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	219	00	C11	0202	8-May-09
UC2	137	02-C15-00-1C	220	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	221	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	222	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	223	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	224	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	225	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	226	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	227	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	228	00	C12	0203	8-May-09

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PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	137	02-C15-00-1C	229	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	230	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	231	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	232	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	233	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	234	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	235	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	236	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	237	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	238	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	239	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	240	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	241	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	242	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	243	00	C12	0203	8-May-09
UC2	137	02-C15-00-1C	244	00	C12	0203	11-May-09
UC2	137	02-C15-00-1C	245	00	C12	0203	11-May-09
UC2	137	02-C15-00-1C	246	00	C12	0203	11-May-09
UC2	137	02-C15-00-1C	247	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	248	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	249	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	250	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	251	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	252	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	253	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	254	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	255	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	256	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	257	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	258	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	259	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	260	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	261	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	262	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	263	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	264	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	265	00	C13	0204	11-May-09

Final Removal Action Completion Report
 Parcels UC1 and UC2
 Hunters Point Shipyard
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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	137	02-C15-00-1C	266	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	267	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	268	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	269	00	C13	0204	11-May-09
UC2	137	02-C15-00-1C	270	00	C13	0204	11-May-09
UC2	137	02-C15-00-1D	1	00	C36	0228	25-Jun-09
UC2	137	02-C15-00-1E	1	00	C13	0204	11-May-09
UC2	137	02-C15-00-1E	2	00	C13	0204	11-May-09
UC2	137	02-C15-00-1E	3	00	C13	0204	11-May-09
UC2	137	02-C15-00-1E	4	00	C13	0204	11-May-09
UC2	137	02-C15-00-1E	5	00	C13	0204	11-May-09
UC2	137	02-C15-00-1E	6	00	C14	0205	11-May-09
UC2	137	02-C15-00-1E	7	00	C14	0205	11-May-09
UC2	137	02-C15-00-1E	8	00	C14	0205	11-May-09
UC2	137	02-C15-00-1E	9	00	C14	0205	11-May-09
UC2	137	02-C15-00-1E	10	00	C14	0205	11-May-09
UC2	137	02-C15-00-1E	11	00	C14	0205	11-May-09
UC2	137	02-C15-00-1E	12	00	C14	0205	11-May-09
UC2	137	02-C15-00-1E	13	00	C14	0205	11-May-09
UC2	137	02-C15-00-1E	14	00	C14	0205	11-May-09
UC2	137	02-C15-00-1E	15	00	C14	0205	11-May-09
UC2	137	02-C15-00-1E	16	00	C14	0205	11-May-09
UC2	137	02-C15-00-1E	17	00	C14	0205	11-May-09
UC2	138	02-C15-00-1E	18	00	C14	0205	12-May-09
UC2	138	02-C15-00-1E	19	00	C14	0205	12-May-09
UC2	138	02-C15-00-1E	20	00	C14	0205	12-May-09
UC2	138	02-C15-00-1E	21	00	C14	0205	12-May-09
UC2	138	02-C15-00-1E	22	00	C14	0205	12-May-09
UC2	138	02-C15-00-1E	23	00	C14	0205	12-May-09
UC2	138	02-C15-00-1E	24	00	C14	0205	12-May-09
UC2	138	02-C15-00-1E	25	00	C14	0205	12-May-09
UC2	138	02-C15-00-1E	26	00	C14	0205	12-May-09
UC2	138	02-C15-00-1E	27	00	C14	0205	12-May-09
UC2	138	02-C15-00-1E	28	00	C14	0205	12-May-09
UC2	138	02-C15-00-1E	29	00	C14	0205	12-May-09
UC2	138	02-C15-00-1E	30	00	C14	0205	12-May-09
UC2	138	02-C15-00-1E	31	00	C14	0205	12-May-09

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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	138	02-C15-00-1E	32	00	C14	0205	12-May-09
UC2	138	02-C15-00-1E	33	00	C14	0205	12-May-09
UC2	138	02-C15-00-1E	34	00	C15	0206	12-May-09
UC2	138	02-C15-00-1E	35	00	C15	0206	12-May-09
UC2	138	02-C15-00-1E	36	00	C15	0206	12-May-09
UC2	138	02-C15-00-1E	37	00	C15	0206	12-May-09
UC2	138	02-C15-00-1E	38	00	C15	0206	12-May-09
UC2	138	02-C15-00-1E	39	00	C15	0206	12-May-09
UC2	138	02-C15-00-1E	40	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	41	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	42	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	43	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	44	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	45	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	46	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	47	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	48	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	49	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	50	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	51	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	52	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	53	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	54	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	55	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	56	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	57	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	58	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	59	00	C15	0206	13-May-09
UC2	138	02-C15-00-1E	60	00	C16	0207	13-May-09
UC2	138	02-C15-00-1E	61	00	C16	0207	13-May-09
UC2	138	02-C15-00-1E	62	00	C16	0207	13-May-09
UC2	138	02-C15-00-1E	63	00	C16	0207	13-May-09
UC2	138	02-C15-00-1E	64	00	C16	0207	13-May-09
UC2	138	02-C15-00-1E	65	00	C16	0207	13-May-09
UC2	138	02-C15-00-1E	66	00	C16	0207	13-May-09
UC2	138	02-C15-00-1E	67	00	C16	0207	13-May-09
UC2	138	02-C15-00-1E	68	00	C16	0207	13-May-09

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PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	138	02-C15-00-1E	69	00	C16	0207	13-May-09
UC2	138	02-C15-00-1E	70	00	C16	0207	13-May-09
UC2	138	02-C15-00-1E	71	00	C16	0207	13-May-09
UC2	138	02-C15-00-1E	72	00	C16	0207	13-May-09
UC2	138	02-C15-00-1E	73	00	C16	0207	13-May-09
UC2	138	02-C15-00-1E	74	00	C16	0207	13-May-09
UC2	138	02-C15-00-1E	75	00	C16	0207	13-May-09
UC2	138	02-C15-00-1E	76	00	C16	0207	13-May-09
UC2	138	02-C15-00-1E	77	00	C16	0207	13-May-09
UC2	138	02-C15-00-1E	78	00	C16	0207	14-May-09
UC2	138	02-C15-00-1E	79	00	C16	0207	14-May-09
UC2	138	02-C15-00-1E	80	00	C16	0207	14-May-09
UC2	138	02-C15-00-1E	81	00	C16	0207	14-May-09
UC2	138	02-C15-00-1E	82	00	C16	0207	14-May-09
UC2	138	02-C15-00-1E	83	00	C16	0207	14-May-09
UC2	138	02-C15-00-1E	84	00	C16	0207	14-May-09
UC2	138	02-C15-00-1E	85	00	C16	0207	14-May-09
UC2	138	02-C15-00-1E	86	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	87	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	88	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	89	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	90	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	91	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	92	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	93	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	94	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	95	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	96	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	97	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	98	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	99	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	100	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	101	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	102	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	103	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	104	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	105	00	C20	0208	14-May-09

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PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	138	02-C15-00-1E	106	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	107	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	108	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	109	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	110	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	111	00	C20	0208	14-May-09
UC2	138	02-C15-00-1E	112	00	C33	0209	14-May-09
UC2	138	02-C15-00-1E	113	00	C33	0209	14-May-09
UC2	138	02-C15-00-1E	114	00	C33	0209	14-May-09
UC2	138	02-C15-00-1E	115	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	116	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	117	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	118	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	119	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	120	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	121	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	122	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	123	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	124	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	125	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	126	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	127	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	128	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	129	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	130	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	131	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	132	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	133	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	134	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	135	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	136	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	137	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	138	00	C33	0209	15-May-09
UC2	138	02-C15-00-1E	139	00	C33	0209	15-May-09
UC1	139	02-D26-00-1D	1	00	C23	0181	3-Apr-09
UC1	139	02-D26-00-1D	2	00	C23	0181	3-Apr-09
UC1	139	02-D26-00-1E	1	00	C06	0198	1-May-09

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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	139	02-D26-00-1E	2	00	C06	0198	1-May-09
UC1	139	02-D26-00-1E	3	00	C06	0198	1-May-09
UC1	139	02-D26-00-1E	4	00	C06	0198	4-May-09
UC1	139	02-D26-00-1E	5	00	C06	0198	4-May-09
UC1	139	02-D26-00-1E	6	00	C07	0199	4-May-09
UC1	139	02-D26-00-1E	7	00	C07	0199	4-May-09
UC1	139	02-D26-00-1E	8	00	C07	0199	4-May-09
UC1	139	02-D26-00-1H	1	00	C01	0176	23-Mar-09
UC1	139	02-D26-00-2C	1	00	C26	0184	10-Apr-09
UC1	139	02-D26-00-2C	2	00	C26	0184	10-Apr-09
UC1	139	02-D26-00-2C	3	00	C26	0184	10-Apr-09
UC1	139	02-D26-00-2C	4	00	C26	0184	10-Apr-09
UC1	139	02-D26-00-2C	5	00	C26	0184	10-Apr-09
UC1	139	02-D26-00-2C	6	00	C26	0184	10-Apr-09
UC1	139	02-D26-00-2C	98	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	99	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	100	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	101	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	102	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	103	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	104	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	105	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	106	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	107	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	108	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	109	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	110	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	111	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	112	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	113	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	114	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	115	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	116	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	117	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	118	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	119	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	120	00	C30	0189	16-Apr-09

TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	139	02-D26-00-2C	121	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	122	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	123	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	124	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	125	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	126	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	127	00	C30	0189	16-Apr-09
UC1	139	02-D26-00-2C	128	00	C31	0190	16-Apr-09
UC1	139	02-D26-00-2C	129	00	C31	0190	16-Apr-09
UC1	139	02-D26-00-2C	130	00	C31	0190	16-Apr-09
UC1	139	02-D26-00-2C	131	00	C31	0190	16-Apr-09
UC1	139	02-D26-00-2C	132	00	C31	0190	17-Apr-09
UC1	139	02-D26-00-2C	133	00	C31	0190	17-Apr-09
UC1	139	02-D26-00-2C	134	00	C31	0190	17-Apr-09
UC1	139	02-D26-00-2C	135	00	C31	0190	17-Apr-09
UC1	139	02-D26-00-2C	136	00	C31	0190	17-Apr-09
UC1	139	02-D26-00-2C	137	00	C31	0190	17-Apr-09
UC1	139	02-D26-00-2C	138	00	C31	0190	17-Apr-09
UC1	139	02-D26-00-2C	139	00	C31	0190	17-Apr-09
UC1	139	02-D26-00-2C	140	00	C31	0190	17-Apr-09
UC1	139	02-D26-00-2C	141	00	C31	0190	17-Apr-09
UC1	139	02-D26-00-2C	142	00	C31	0190	17-Apr-09
UC1	139	02-D26-00-2C	143	00	C31	0190	17-Apr-09
UC1	139	02-D26-00-2C	144	00	C31	0190	17-Apr-09
UC1	139	02-D26-00-3A	1	00	C07	0199	4-May-09
UC1	139	02-D26-00-3A	2	00	C07	0199	4-May-09
UC1	139	02-D26-00-3A	3	00	C07	0199	4-May-09
UC1	139	02-D26-00-3A	4	00	C07	0199	4-May-09
UC1	139	02-D26-00-3A	5	00	C07	0199	4-May-09
UC1	139	02-D26-00-3A	6	00	C07	0199	4-May-09
UC1	139	02-D26-00-3A	7	00	C07	0199	4-May-09
UC1	139	02-D26-00-3A	8	00	C07	0199	4-May-09
UC1	139	02-D26-00-3A	9	00	C07	0199	4-May-09
UC1	139	02-D26-00-3C	1	00	C23	0181	2-Apr-09
UC1	139	02-D26-00-3C	2	00	C23	0181	2-Apr-09
UC1	139	02-D26-00-3C	3	00	C23	0181	2-Apr-09
UC1	139	02-D26-00-3C	4	00	C23	0181	2-Apr-09

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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	139	02-D26-00-3C	5	00	C23	0181	2-Apr-09
UC1	139	02-D26-00-3C	6	00	C23	0181	3-Apr-09
UC1	139	02-D26-00-3C	7	00	C23	0181	3-Apr-09
UC1	139	02-D26-00-3C	8	00	C23	0181	3-Apr-09
UC1	139	02-D26-00-3C	9	00	C23	0181	3-Apr-09
UC1	139	02-D26-00-3E	1	00	C01	0176	23-Mar-09
UC1	139	02-D26-00-3E	2	00	C01	0176	23-Mar-09
UC1	139	02-D26-00-3E	3	00	C01	0176	24-Mar-09
UC1	139	02-D26-00-3E	4	00	C01	0176	24-Mar-09
UC1	139	02-D26-00-3E	5	00	C01	0176	24-Mar-09
UC1	139	02-D26-00-3E	6	00	C01	0176	24-Mar-09
UC1	139	02-D26-00-3E	7	00	C06	0198	1-May-09
UC1	139	02-D26-00-3E	8	00	C06	0198	1-May-09
UC1	139	02-D26-00-3E	9	00	C06	0198	1-May-09
UC1	139	02-D26-00-3E	10	00	C06	0198	1-May-09
UC1	139	02-D26-00-3E	11	00	C06	0198	1-May-09
UC1	139	02-D26-00-3E	12	00	C06	0198	1-May-09
UC1	139	02-D26-00-3E	13	00	C06	0198	1-May-09
UC1	139	02-D26-00-3E	14	00	C06	0198	1-May-09
UC1	139	02-D26-00-3E	15	00	C06	0198	1-May-09
UC1	139	02-D26-00-3E	16	00	C06	0198	1-May-09
UC1	139	02-D26-00-3E	17	00	C06	0198	1-May-09
UC1	139	02-D26-00-3E	18	00	C06	0198	1-May-09
UC1	139	02-D26-00-3E	19	00	C06	0198	1-May-09
UC1	139	02-D26-00-3E	20	00	C06	0198	4-May-09
UC1	139	02-D26-00-3E	21	00	C06	0198	4-May-09
UC1	139	02-D26-00-3E	22	00	C06	0198	4-May-09
UC1	139	02-D26-00-3E	23	00	C06	0198	4-May-09
UC1	139	02-D26-00-3E	24	00	C06	0198	4-May-09
UC1	139	02-D26-00-3E	25	00	C06	0198	4-May-09
UC1	139	02-D26-00-3E	26	00	C06	0198	4-May-09
UC1	139	02-D26-00-3E	27	00	C06	0198	4-May-09
UC1	139	02-D26-00-3E	28	00	C06	0198	4-May-09
UC1	139	02-D26-00-3E	29	00	C06	0198	4-May-09
UC1	139	02-D26-00-3E	30	00	C07	0199	4-May-09
UC1	139	02-D26-00-3E	31	00	C07	0199	4-May-09
UC1	139	02-D26-00-3E	32	00	C07	0199	4-May-09

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 Parcels UC1 and UC2
 Hunters Point Shipyard
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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	139	02-D26-00-3E	33	00	C07	0199	4-May-09
UC1	139	02-D26-00-3E	34	00	C07	0199	4-May-09
UC1	139	02-D26-00-3E	35	00	C07	0199	4-May-09
UC1	139	02-D26-00-3E	36	00	C07	0199	4-May-09
UC1	139	02-D26-00-3E	37	00	C07	0199	4-May-09
UC1	139	02-D26-00-3E	38	00	C07	0199	4-May-09
UC1	139	02-D26-00-3E	39	00	C07	0199	4-May-09
UC1	139	02-D26-00-3E	40	00	C07	0199	4-May-09
UC1	140	02-D26-00-1A	1	00	C07	0199	6-May-09
UC1	140	02-D26-00-1A	2	00	C07	0199	6-May-09
UC1	140	02-D26-00-1A	3	00	C07	0199	6-May-09
UC1	140	02-D26-00-1A	4	00	C07	0199	6-May-09
UC1	140	02-D26-00-1A	5	00	C07	0199	6-May-09
UC1	140	02-D26-00-1A	6	00	C09	0200	6-May-09
UC1	140	02-D26-00-1A	7	00	C09	0200	6-May-09
UC1	140	02-D26-00-1A	8	00	C09	0200	6-May-09
UC1	140	02-D26-00-1A	9	00	C09	0200	6-May-09
UC1	140	02-D26-00-1A	10	00	C09	0200	6-May-09
UC1	140	02-D26-00-1A	11	00	C09	0200	6-May-09
UC1	140	02-D26-00-1A	12	00	C09	0200	6-May-09
UC1	140	02-D26-00-1A	13	00	C09	0200	6-May-09
UC1	140	02-D26-00-1A	14	00	C09	0200	6-May-09
UC1	140	02-D26-00-1A	15	00	C09	0200	6-May-09
UC1	140	02-D26-00-1A	16	00	C09	0200	6-May-09
UC1	140	02-D26-00-1A	17	00	C09	0200	6-May-09
UC1	140	02-D26-00-1G	1	00	C01	0176	24-Mar-09
UC1	140	02-D26-00-1G	2	00	C01	0176	24-Mar-09
UC1	140	02-D26-00-1G	3	00	C01	0176	24-Mar-09
UC1	140	02-D26-00-1G	4	00	C01	0176	24-Mar-09
UC1	140	02-D26-00-1I	1	00	C09	0200	6-May-09
UC1	140	02-D26-00-2A	1	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	2	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	3	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	4	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	5	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	6	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	7	00	C4	0221	11-Jun-09

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 Parcels UC1 and UC2
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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	140	02-D26-00-2A	8	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	9	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	10	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	11	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	12	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	13	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	14	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	15	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	16	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	17	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	18	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	19	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	20	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	21	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	22	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	23	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	24	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	25	00	C4	0221	11-Jun-09
UC1	140	02-D26-00-2A	26	00	C4	0221	12-Jun-09
UC1	140	02-D26-00-2A	27	00	C4	0221	12-Jun-09
UC1	140	02-D26-00-2A	28	00	C4	0221	12-Jun-09
UC1	140	02-D26-00-2A	29	00	C4	0221	12-Jun-09
UC1	140	02-D26-00-2A	30	00	C4	0221	12-Jun-09
UC1	140	02-D26-00-2A	31	00	C9	0200	12-Jun-09
UC1	140	02-D26-00-2A	32	00	C9	0200	12-Jun-09
UC1	140	02-D26-00-2A	33	00	C9	0200	12-Jun-09
UC1	140	02-D26-00-2A	34	00	C9	0200	12-Jun-09
UC1	140	02-D26-00-2A	35	00	C9	0200	12-Jun-09
UC1	140	02-D26-00-2A	36	00	C9	0200	12-Jun-09
UC1	140	02-D26-00-2A	37	00	C9	0200	12-Jun-09
UC1	140	02-D26-00-2A	38	00	C9	0200	12-Jun-09
UC1	140	02-D26-00-2A	39	00	C9	0200	12-Jun-09
UC1	140	02-D26-00-2A	40	00	C9	0200	12-Jun-09
UC1	140	02-D26-00-2A	41	00	C9	0200	12-Jun-09
UC1	140	02-D26-00-2A	42	00	C9	0200	12-Jun-09
UC1	140	02-D26-00-2A	43	00	C9	0200	12-Jun-09
UC1	140	02-D26-00-2A	44	00	C9	0200	12-Jun-09

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PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	140	02-D26-00-2A	45	00	C9	0200	12-Jun-09
UC1	140	02-D26-00-2A	46	00	C9	0200	12-Jun-09
UC1	140	02-D26-00-2A	47	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	48	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	49	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	50	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	51	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	52	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	53	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	54	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	55	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	56	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	57	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	58	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	59	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	60	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	61	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	62	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	63	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	64	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	65	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	66	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	67	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	68	00	C5	0222	12-Jun-09
UC1	140	02-D26-00-2A	69	00	C5	0222	15-Jun-09
UC1	140	02-D26-00-2A	70	00	C5	0222	15-Jun-09
UC1	140	02-D26-00-2A	71	00	C5	0222	15-Jun-09
UC1	140	02-D26-00-2A	72	00	C5	0222	15-Jun-09
UC1	140	02-D26-00-2A	73	00	C5	0222	15-Jun-09
UC1	140	02-D26-00-2A	74	00	C5	0222	15-Jun-09
UC1	140	02-D26-00-2A	75	00	C5	0222	15-Jun-09
UC1	140	02-D26-00-2A	76	00	C5	0222	15-Jun-09
UC1	140	02-D26-00-2A	77	00	C28	0224	15-Jun-09
UC1	140	02-D26-00-2A	78	00	C28	0224	15-Jun-09
UC1	140	02-D26-00-2A	79	00	C28	0224	15-Jun-09
UC1	140	02-D26-00-2A	80	00	C28	0224	15-Jun-09
UC1	140	02-D26-00-2A	81	00	C28	0224	15-Jun-09

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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	140	02-D26-00-2A	82	00	C28	0224	15-Jun-09
UC1	140	02-D26-00-2A	83	00	C28	0224	15-Jun-09
UC1	140	02-D26-00-2A	84	00	C28	0224	15-Jun-09
UC1	140	02-D26-00-2A	85	00	C28	0224	15-Jun-09
UC1	140	02-D26-00-2A	86	00	C28	0224	15-Jun-09
UC1	140	02-D26-00-2A	87	00	C28	0224	15-Jun-09
UC1	140	02-D26-00-2A	88	00	C28	0224	15-Jun-09
UC1	140	02-D26-00-2A	89	00	C28	0224	15-Jun-09
UC1	140	02-D26-00-2A	90	00	C28	0224	15-Jun-09
UC1	140	02-D26-00-2A	91	00	C28	0224	15-Jun-09
UC2	141	02-C15-00-1E	140	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	141	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	142	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	143	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	144	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	145	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	146	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	147	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	148	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	149	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	150	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	151	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	152	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	153	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	154	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	155	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	156	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	157	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	158	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	159	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	160	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	161	00	C24	0211	27-May-09
UC2	141	02-C15-00-1E	162	00	C25	0212	27-May-09
UC2	141	02-C15-00-1E	163	00	C25	0212	27-May-09
UC2	141	02-C15-00-1E	164	00	C25	0212	27-May-09
UC2	141	02-C15-00-1E	165	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	166	00	C25	0212	28-May-09

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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	141	02-C15-00-1E	167	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	168	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	169	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	170	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	171	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	172	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	173	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	174	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	175	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	176	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	177	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	178	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	179	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	180	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	181	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	182	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	183	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	184	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	185	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	186	00	C25	0212	28-May-09
UC2	141	02-C15-00-1E	187	00	C01	0213	28-May-09
UC2	141	02-C15-00-1E	188	00	C01	0213	28-May-09
UC2	141	02-C15-00-1E	189	00	C01	0213	28-May-09
UC2	141	02-C15-00-1E	190	00	C01	0213	28-May-09
UC2	141	02-C15-00-1E	191	00	C01	0213	28-May-09
UC2	141	02-C15-00-1E	192	00	C01	0213	28-May-09
UC2	141	02-C15-00-1E	193	00	C01	0213	28-May-09
UC2	141	02-C15-00-1E	194	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	195	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	196	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	197	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	198	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	199	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	200	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	201	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	202	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	203	00	C01	0213	29-May-09

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Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	141	02-C15-00-1E	204	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	205	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	206	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	207	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	208	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	209	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	210	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	211	00	C31	0214	29-May-09
UC2	141	02-C15-00-1E	212	00	C31	0214	29-May-09
UC2	141	02-C15-00-1E	213	00	C31	0214	29-May-09
UC2	141	02-C15-00-1E	214	00	C31	0214	29-May-09
UC2	141	02-C15-00-1E	215	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	216	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	217	00	C01	0213	29-May-09
UC2	141	02-C15-00-1E	218	00	C31	0214	29-May-09
UC2	141	02-C15-00-1E	219	00	C31	0214	29-May-09
UC2	141	02-C15-00-1E	220	00	C31	0214	29-May-09
UC2	141	02-C15-00-1E	221	00	C31	0214	1-Jun-09
UC2	141	02-C15-00-1E	222	00	C31	0214	1-Jun-09
UC2	141	02-C15-00-1E	223	00	C31	0214	1-Jun-09
UC2	141	02-C15-00-1E	224	00	C31	0214	1-Jun-09
UC2	141	02-C15-00-1E	225	00	C31	0214	1-Jun-09
UC2	141	02-C15-00-1F	1	00	C31	0214	1-Jun-09
UC2	141	02-C15-00-1F	2	00	C31	0214	1-Jun-09
UC2	141	02-C15-00-1F	3	00	C31	0214	1-Jun-09
UC2	141	02-C15-00-1F	4	00	C31	0214	1-Jun-09
UC2	141	02-C15-00-1F	5	00	C31	0214	1-Jun-09
UC2	141	02-C15-00-1F	6	00	C31	0214	1-Jun-09
UC2	141	02-C15-00-1F	7	00	C31	0214	1-Jun-09
UC2	141	02-C15-00-1F	8	00	C31	0214	1-Jun-09
UC2	141	02-C15-00-1F	9	00	C31	0214	1-Jun-09
UC2	141	02-C15-00-1F	10	00	C31	0214	1-Jun-09
UC2	141	02-C15-00-1F	11	00	C31	0214	1-Jun-09
UC2	141	02-C15-00-1F	12	00	C31	0214	1-Jun-09
UC2	141	02-C15-00-1F	13	00	C31	0214	1-Jun-09
UC2	141	02-C15-00-1F	14	00	C27	0215	1-Jun-09
UC2	141	02-C15-00-2G	1	00	C27	0215	2-Jun-09

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 Parcels UC1 and UC2
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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	141	02-C15-00-2G	2	00	C27	0215	2-Jun-09
UC2	141	02-C15-00-2G	3	00	C27	0215	2-Jun-09
UC2	141	02-C15-00-2G	4	00	C27	0215	2-Jun-09
UC2	141	02-C15-00-2H	1	00	C01	0213	29-May-09
UC2	141	02-C15-00-2H	2	00	C01	0213	29-May-09
UC2	141	02-C15-00-2H	3	00	C01	0213	29-May-09
UC2	141	02-C15-00-2H	4	00	C31	0214	29-May-09
UC2	142	02-C15-00-1F	15	00	C27	0215	4-Jun-09
UC2	142	02-C15-00-1F	16	00	C27	0215	4-Jun-09
UC2	142	02-C15-00-1F	17	00	C27	0215	4-Jun-09
UC2	142	02-C15-00-1F	18	00	C27	0215	4-Jun-09
UC2	142	02-C15-00-1F	19	00	C27	0215	4-Jun-09
UC2	142	02-C15-00-1F	20	00	C27	0215	4-Jun-09
UC2	142	02-C15-00-1F	21	00	C27	0215	5-Jun-09
UC2	142	02-C15-00-1F	22	00	C27	0215	5-Jun-09
UC2	142	02-C15-00-1F	23	00	C27	0215	5-Jun-09
UC2	142	02-C15-00-1F	24	00	C27	0215	5-Jun-09
UC2	142	02-C15-00-1F	25	00	C27	0215	5-Jun-09
UC2	142	02-C15-00-1F	26	00	C27	0215	5-Jun-09
UC2	142	02-C15-00-1F	27	00	C27	0215	5-Jun-09
UC2	142	02-C15-00-1F	28	00	C27	0215	5-Jun-09
UC2	142	02-C15-00-1F	29	00	C27	0215	5-Jun-09
UC2	142	02-C15-00-1F	30	00	C27	0215	5-Jun-09
UC2	142	02-C15-00-1F	31	00	C27	0215	5-Jun-09
UC2	142	02-C15-00-1F	32	00	C27	0215	5-Jun-09
UC2	142	02-C15-00-1F	33	00	C27	0215	5-Jun-09
UC2	142	02-C15-00-1F	34	00	C27	0215	5-Jun-09
UC2	142	02-C15-00-1F	35	00	C27	0215	5-Jun-09
UC2	142	02-C15-00-1F	36	00	C27	0215	5-Jun-09
UC2	142	02-C15-00-1F	37	00	C27	0215	5-Jun-09
UC2	142	02-C15-00-1F	38	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	39	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	40	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	41	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	42	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	43	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	44	00	C30	0216	5-Jun-09

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 Parcels UC1 and UC2
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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	142	02-C15-00-1F	45	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	46	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	47	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	48	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	49	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	50	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	51	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	52	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	53	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	54	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	55	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	56	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	57	00	C30	0216	5-Jun-09
UC2	142	02-C15-00-1F	58	00	C30	0216	8-Jun-09
UC2	142	02-C15-00-1F	59	00	C30	0216	8-Jun-09
UC2	142	02-C15-00-1F	60	00	C30	0216	8-Jun-09
UC2	142	02-C15-00-1F	61	00	C30	0216	8-Jun-09
UC2	142	02-C15-00-1F	62	00	C30	0216	8-Jun-09
UC2	142	02-C15-00-1F	63	00	C30	0216	8-Jun-09
UC2	142	02-C15-00-1F	64	00	C30	0216	8-Jun-09
UC2	142	02-C15-00-1F	65	00	C30	0216	8-Jun-09
UC2	142	02-C15-00-1F	66	00	C21	0217	8-Jun-09
UC2	142	02-C15-00-1F	67	00	C21	0217	8-Jun-09
UC2	142	02-C15-00-1F	68	00	C21	0217	8-Jun-09
UC2	142	02-C15-00-1F	69	00	C21	0217	8-Jun-09
UC2	142	02-C15-00-1F	70	00	C21	0217	8-Jun-09
UC2	142	02-C15-00-1F	71	00	C21	0217	8-Jun-09
UC2	142	02-C15-00-1F	72	00	C21	0217	8-Jun-09
UC2	142	02-C15-00-1F	73	00	C21	0217	8-Jun-09
UC2	142	02-C15-00-1F	74	00	C21	0217	8-Jun-09
UC2	142	02-C15-00-1F	75	00	C21	0217	8-Jun-09
UC2	142	02-C15-00-1F	76	00	C21	0217	8-Jun-09
UC2	142	02-C15-00-1F	77	00	C21	0217	8-Jun-09
UC2	142	02-C15-00-1F	78	00	C21	0217	9-Jun-09
UC2	142	02-C15-00-1F	79	00	C21	0217	9-Jun-09
UC2	142	02-C15-00-1F	80	00	C21	0217	9-Jun-09
UC2	142	02-C15-00-1F	81	00	C21	0217	9-Jun-09

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 Parcels UC1 and UC2
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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	142	02-C15-00-1F	82	00	C21	0217	9-Jun-09
UC2	142	02-C15-00-1F	83	00	C21	0217	9-Jun-09
UC2	142	02-C15-00-1F	84	00	C21	0217	9-Jun-09
UC2	142	02-C15-00-1F	85	00	C21	0217	9-Jun-09
UC2	142	02-C15-00-1F	86	00	C21	0217	9-Jun-09
UC2	142	02-C15-00-1F	87	00	C21	0217	9-Jun-09
UC2	142	02-C15-00-1F	88	00	C21	0217	9-Jun-09
UC2	142	02-C15-00-1F	89	00	C21	0217	9-Jun-09
UC2	142	02-C15-00-1F	90	00	C21	0217	9-Jun-09
UC2	142	02-C15-00-1F	91	00	C21	0217	9-Jun-09
UC2	142	02-C15-00-1F	92	00	C21	0217	9-Jun-09
UC2	142	02-C15-00-1F	93	00	C21	0217	9-Jun-09
UC2	142	02-C15-00-1F	94	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	95	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	96	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	97	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	98	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	99	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	100	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	101	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	102	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	103	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	104	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	105	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	106	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	107	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	108	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	109	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	110	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	111	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	112	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	113	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	114	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	115	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	116	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	117	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	118	00	C19	0218	9-Jun-09

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 Parcels UC1 and UC2
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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	142	02-C15-00-1F	119	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	120	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	121	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	122	00	C19	0218	9-Jun-09
UC2	142	02-C15-00-1F	123	00	C17	0219	9-Jun-09
UC2	142	02-C15-00-1F	124	00	C17	0219	9-Jun-09
UC2	142	02-C15-00-1F	125	00	C17	0219	9-Jun-09
UC2	142	02-C15-00-1F	126	00	C17	0219	9-Jun-09
UC2	142	02-C15-00-1F	127	00	C17	0219	9-Jun-09
UC2	142	02-C15-00-1F	128	00	C17	0219	9-Jun-09
UC2	142	02-C15-00-1F	129	00	C17	0219	9-Jun-09
UC2	142	02-C15-00-1F	130	00	C17	0219	9-Jun-09
UC2	143	02-C15-00-2D	1	00	C35	0210	20-May-09
UC2	143	02-C15-00-2D	2	00	C35	0210	21-May-09
UC2	143	02-C15-00-2D	3	00	C35	0210	21-May-09
UC2	143	02-C15-00-2D	4	00	C35	0210	21-May-09
UC2	143	02-C15-00-2D	5	00	C35	0210	22-May-09
UC2	143	02-C15-00-2D	6	00	C35	0210	22-May-09
UC2	143	02-C15-00-2D	7	00	C35	0210	22-May-09
UC2	143	02-C15-00-2D	8	00	C35	0210	26-May-09
UC2	143	02-C15-00-8E	1	00	C35	0210	19-May-09
UC2	143	02-C15-00-8E	2	00	C35	0210	19-May-09
UC2	143	02-C15-00-8E	3	00	C35	0210	19-May-09
UC2	143	02-C15-00-8E	4	00	C35	0210	19-May-09
UC2	143	02-C15-00-8E	5	00	C35	0210	20-May-09
UC2	143	02-C15-00-8E	6	00	C35	0210	20-May-09
UC2	143	02-C15-00-8E	7	00	C35	0210	20-May-09
UC2	144	02-C15-00-2A	1	00	C35	0210	21-May-09
UC2	144	02-C15-00-2A	2	00	C35	0210	21-May-09
UC2	144	02-C15-00-2A	3	00	C35	0210	21-May-09
UC2	144	02-C15-00-2A	4	00	C35	0210	21-May-09
UC2	144	02-C15-00-2A	5	00	C35	0210	21-May-09
UC2	144	02-C15-00-2A	6	00	C35	0210	22-May-09
UC2	144	02-C15-00-2A	7	00	C35	0210	22-May-09
UC2	144	02-C15-00-2A	8	00	C35	0210	22-May-09
UC2	144	02-C15-00-2A	9	00	C35	0210	22-May-09
UC2	144	02-C15-00-2A	10	00	C35	0210	26-May-09

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 Parcels UC1 and UC2
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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	144	02-C15-00-2A	11	00	C24	0211	27-May-09
UC2	144	02-C15-00-2A	12	00	C24	0211	27-May-09
UC2	144	02-C15-00-2A	13	00	C24	0211	27-May-09
UC2	144	02-C15-00-2A	14	00	C25	0212	27-May-09
UC2	144	02-C15-00-2D	9	00	C35	0210	26-May-09
UC2	144	02-C15-00-2D	10	00	C35	0210	26-May-09
UC2	144	02-C15-00-2G	5	00	C27	0215	2-Jun-09
UC2	145	02-C15-00-1D	2	00	C36	0228	25-Jun-09
UC2	145	02-C15-00-1D	3	00	C36	0228	25-Jun-09
UC2	145	02-C15-00-1D	4	00	C36	0228	25-Jun-09
UC2	145	02-C15-00-1D	5	00	C36	0228	25-Jun-09
UC2	145	02-C15-00-1D	6	00	C36	0228	25-Jun-09
UC2	145	02-C15-00-1D	7	00	C36	0228	25-Jun-09
UC2	145	02-C15-00-1D	8	00	C36	0228	25-Jun-09
UC2	145	02-C15-00-1D	9	00	C36	0228	25-Jun-09
UC2	145	02-C15-00-8B	1	00	C25	0212	28-May-09
UC2	145	02-C15-00-8B	2	00	C25	0212	28-May-09
UC2	145	02-C15-00-8B	3	00	C01	0213	28-May-09
UC1	146	02-D26-00-2D	1	00	C25	0183	9-Apr-09
UC1	146	02-D26-00-2D	2	00	C25	0183	9-Apr-09
UC1	146	02-D26-00-2E	1	00	C06	0227	17-Jun-09
UC1	146	02-D26-00-2E	2	00	C06	0227	17-Jun-09
UC1	146	02-D26-00-2E	3	00	C06	0227	17-Jun-09
UC1	146	02-D26-00-2E	4	00	C06	0227	17-Jun-09
UC1	146	02-D26-00-2E	5	00	C06	0227	17-Jun-09
UC1	146	02-D26-00-2E	6	00	C06	0227	17-Jun-09
UC1	146	02-D26-00-2E	7	00	C06	0227	17-Jun-09
UC1	146	02-D26-00-2E	8	00	C06	0227	17-Jun-09
UC1	146	02-D26-00-2E	9	00	C06	0227	17-Jun-09
UC1	146	02-D26-00-2E	10	00	C06	0227	18-Jun-09
UC1	146	02-D26-00-2E	11	00	C06	0227	18-Jun-09
UC1	146	02-D26-00-2E	12	00	C06	0227	18-Jun-09
UC1	146	02-D26-00-2E	13	00	C06	0227	18-Jun-09
UC1	146	02-D26-00-2E	14	00	C06	0227	18-Jun-09
UC1	146	02-D26-00-2E	15	00	C06	0227	18-Jun-09
UC1	146	02-D26-00-2E	16	00	C06	0227	18-Jun-09
UC1	146	02-D26-00-2E	17	00	C06	0227	18-Jun-09

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PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	146	02-D26-00-2E	18	00	C06	0227	18-Jun-09
UC1	146	02-D26-00-3F	38	00	C23	0181	6-Apr-09
UC1	146	02-D26-00-3F	39	00	C23	0181	6-Apr-09
UC1	146	02-D26-00-3F	40	00	C23	0181	6-Apr-09
UC1	146	02-D26-00-3F	41	00	C23	0181	6-Apr-09
UC1	146	02-D26-00-3F	42	00	C23	0181	6-Apr-09
UC1	146	02-D26-00-3F	43	00	C23	0181	6-Apr-09
UC1	146	02-D26-00-3F	44	00	C23	0181	6-Apr-09
UC1	146	02-D26-00-3F	45	00	C23	0181	6-Apr-09
UC1	146	02-D26-00-3F	46	00	C23	0181	6-Apr-09
UC1	146	02-D26-00-3F	47	00	C23	0181	6-Apr-09
UC1	146	02-D26-00-3F	48	00	C23	0181	6-Apr-09
UC1	146	02-D26-00-3F	49	00	C24	0182	6-Apr-09
UC1	146	02-D26-00-3F	50	00	C24	0182	6-Apr-09
UC1	146	02-D26-00-3F	51	00	C24	0182	6-Apr-09
UC1	146	02-D26-00-3F	52	00	C24	0182	6-Apr-09
UC1	146	02-D26-00-3F	53	00	C24	0182	6-Apr-09
UC1	146	02-D26-00-3F	54	00	C24	0182	6-Apr-09
UC1	146	02-D26-00-3F	55	00	C24	0182	6-Apr-09
UC1	146	02-D26-00-3F	56	00	C24	0182	6-Apr-09
UC1	146	02-D26-00-3F	57	00	C24	0182	6-Apr-09
UC1	146	02-D26-00-3F	58	00	C24	0182	6-Apr-09
UC1	146	02-D26-00-3F	59	00	C24	0182	6-Apr-09
UC1	146	02-D26-00-3F	60	00	C24	0182	6-Apr-09
UC1	146	02-D26-00-3F	61	00	C24	0182	6-Apr-09
UC1	146	02-D26-00-3F	62	00	C24	0182	6-Apr-09
UC1	146	02-D26-00-3F	63	00	C24	0182	6-Apr-09
UC1	146	02-D26-00-3F	64	00	C24	0182	6-Apr-09
UC1	146	02-D26-00-3F	65	00	C24	0182	6-Apr-09
UC1	146	02-D26-00-3F	66	00	C24	0182	6-Apr-09
UC1	146	02-D26-00-3F	67	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	68	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	69	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	70	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	71	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	72	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	73	00	C24	0182	7-Apr-09

Final Removal Action Completion Report
 Parcels UC1 and UC2
 Hunters Point Shipyard
 DCN: ECSD-3211-0018-0174
 CTO No. 0018

TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	146	02-D26-00-3F	74	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	75	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	76	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	77	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	78	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	79	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	80	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	81	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	82	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	83	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	84	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	85	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	86	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	87	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	88	00	C24	0182	7-Apr-09
UC1	146	02-D26-00-3F	89	00	C25	0183	7-Apr-09
UC1	146	02-D26-00-3F	90	00	C25	0183	7-Apr-09
UC1	146	02-D26-00-3F	91	00	C25	0183	7-Apr-09
UC1	146	02-D26-00-3F	92	00	C25	0183	7-Apr-09
UC1	146	02-D26-00-3F	93	00	C25	0183	7-Apr-09
UC1	146	02-D26-00-3F	94	00	C25	0183	7-Apr-09
UC1	146	02-D26-00-3F	95	00	C25	0183	7-Apr-09
UC1	146	02-D26-00-3F	96	00	C25	0183	7-Apr-09
UC1	146	02-D26-00-3F	97	00	C25	0183	8-Apr-09
UC1	146	02-D26-00-3F	98	00	C25	0183	8-Apr-09
UC1	146	02-D26-00-3F	99	00	C25	0183	8-Apr-09
UC1	146	02-D26-00-3F	100	00	C25	0183	8-Apr-09
UC1	146	02-D26-00-3F	101	00	C25	0183	8-Apr-09
UC1	146	02-D26-00-3F	102	00	C25	0183	8-Apr-09
UC1	146	02-D26-00-3F	103	00	C25	0183	8-Apr-09
UC1	146	02-D26-00-3F	104	00	C25	0183	8-Apr-09
UC1	146	02-D26-00-3F	105	00	C25	0183	9-Apr-09
UC1	146	02-D26-00-3F	106	00	C25	0183	9-Apr-09
UC1	146	02-D26-00-3F	107	00	C25	0183	9-Apr-09
UC1	146	02-D26-00-3F	108	00	C25	0183	9-Apr-09
UC1	146	02-D26-00-3F	109	00	C25	0183	9-Apr-09
UC1	146	02-D26-00-3F	110	00	C25	0183	9-Apr-09

Final Removal Action Completion Report
 Parcels UC1 and UC2
 Hunters Point Shipyard
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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	146	02-D26-00-3F	111	00	C25	0183	9-Apr-09
UC1	146	02-D26-00-3F	112	00	C25	0183	9-Apr-09
UC1	146	02-D26-00-3F	113	00	C25	0183	9-Apr-09
UC1	146	02-D26-00-3F	114	00	C25	0183	9-Apr-09
UC1	146	02-D26-00-3F	115	00	C25	0183	9-Apr-09
UC1	146	02-D26-00-3F	116	00	C25	0183	9-Apr-09
UC1	146	02-D26-00-3F	117	00	C25	0183	9-Apr-09
UC1	146	02-D26-00-3F	118	00	C25	0183	9-Apr-09
UC1	146	02-D26-00-5A	3	00	C06	0227	17-Jun-09
UC1	146	02-D26-00-5A	4	00	C06	0227	17-Jun-09
UC1	146	02-D26-00-5A	5	00	C06	0227	17-Jun-09
UC1	146	02-D26-00-5A	6	00	C06	0227	17-Jun-09
UC1	146	02-D26-00-5A	7	00	C06	0227	17-Jun-09
UC1	146	02-D26-00-5A	8	00	C06	0227	17-Jun-09
UC1	146	02-D26-00-5A	9	00	C06	0227	17-Jun-09
UC1	146	02-D26-00-5A	10	00	C06	0227	17-Jun-09
UC1	147	02-D26-00-2C	7	00	C26	0184	13-Apr-09
UC1	147	02-D26-00-2C	8	00	C26	0184	13-Apr-09
UC1	147	02-D26-00-2C	9	00	C29	0187	13-Apr-09
UC1	147	02-D26-00-2C	10	00	C29	0187	13-Apr-09
UC1	147	02-D26-00-2C	11	00	C29	0187	13-Apr-09
UC1	147	02-D26-00-2C	12	00	C29	0187	13-Apr-09
UC1	147	02-D26-00-2C	13	00	C29	0187	13-Apr-09
UC1	147	02-D26-00-2C	14	00	C29	0187	13-Apr-09
UC1	147	02-D26-00-2C	15	00	C29	0187	13-Apr-09
UC1	147	02-D26-00-2C	16	00	C29	0187	13-Apr-09
UC1	147	02-D26-00-2C	17	00	C29	0187	13-Apr-09
UC1	147	02-D26-00-2C	18	00	C29	0187	13-Apr-09
UC1	147	02-D26-00-2C	19	00	C29	0187	13-Apr-09
UC1	147	02-D26-00-2C	20	00	C29	0187	13-Apr-09
UC1	147	02-D26-00-2C	21	00	C29	0187	13-Apr-09
UC1	147	02-D26-00-2C	22	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	23	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	24	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	25	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	26	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	27	00	C27	0185	13-Apr-09

Final Removal Action Completion Report
 Parcels UC1 and UC2
 Hunters Point Shipyard
 DCN: ECSD-3211-0018-0174
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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	147	02-D26-00-2C	28	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	29	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	30	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	31	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	32	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	33	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	34	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	35	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	36	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	37	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	38	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	39	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	40	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	41	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	42	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	43	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	44	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	45	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	46	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	47	00	C27	0185	13-Apr-09
UC1	147	02-D26-00-2C	48	00	C27	0185	14-Apr-09
UC1	147	02-D26-00-2C	49	00	C27	0185	14-Apr-09
UC1	147	02-D26-00-2C	50	00	C27	0185	14-Apr-09
UC1	147	02-D26-00-2C	51	00	C28	0186	14-Apr-09
UC1	147	02-D26-00-2C	52	00	C28	0186	14-Apr-09
UC1	147	02-D26-00-2C	53	00	C28	0186	14-Apr-09
UC1	147	02-D26-00-2C	54	00	C28	0186	14-Apr-09
UC1	147	02-D26-00-2C	55	00	C28	0186	14-Apr-09
UC1	147	02-D26-00-2C	56	00	C28	0186	14-Apr-09
UC1	147	02-D26-00-2C	57	00	C28	0186	14-Apr-09
UC1	147	02-D26-00-2C	58	00	C28	0186	14-Apr-09
UC1	147	02-D26-00-2C	59	00	C28	0186	14-Apr-09
UC1	147	02-D26-00-2C	60	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	61	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	62	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	63	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	64	00	C28	0186	15-Apr-09

Final Removal Action Completion Report
 Parcels UC1 and UC2
 Hunters Point Shipyard
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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	147	02-D26-00-2C	65	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	66	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	67	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	68	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	69	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	70	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	71	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	72	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	73	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	74	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	75	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	76	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	77	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	78	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	79	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	80	00	C28	0186	15-Apr-09
UC1	147	02-D26-00-2C	81	00	C29	0187	15-Apr-09
UC1	147	02-D26-00-2C	82	00	C29	0187	15-Apr-09
UC1	147	02-D26-00-2C	83	00	C29	0187	15-Apr-09
UC1	147	02-D26-00-2C	84	00	C29	0187	15-Apr-09
UC1	147	02-D26-00-2C	85	00	C29	0187	15-Apr-09
UC1	147	02-D26-00-2C	86	00	C29	0187	15-Apr-09
UC1	147	02-D26-00-2C	87	00	C29	0187	15-Apr-09
UC1	147	02-D26-00-2C	88	00	C29	0187	15-Apr-09
UC1	147	02-D26-00-2C	89	00	C29	0187	15-Apr-09
UC1	147	02-D26-00-2C	90	00	C29	0187	15-Apr-09
UC1	147	02-D26-00-2C	91	00	C29	0187	15-Apr-09
UC1	147	02-D26-00-2C	92	00	C29	0187	15-Apr-09
UC1	147	02-D26-00-2C	93	00	C29	0187	15-Apr-09
UC1	147	02-D26-00-2C	94	00	C29	0187	15-Apr-09
UC1	147	02-D26-00-2C	95	00	C29	0187	15-Apr-09
UC1	147	02-D26-00-2C	96	00	C29	0187	15-Apr-09
UC1	147	02-D26-00-2C	97	00	C29	0187	15-Apr-09
UC1	147	02-D26-00-2D	3	00	C25	0183	10-Apr-09
UC1	147	02-D26-00-2D	4	00	C25	0183	10-Apr-09
UC1	147	02-D26-00-2D	5	00	C25	0183	10-Apr-09
UC1	147	02-D26-00-2D	6	00	C25	0183	10-Apr-09

Final Removal Action Completion Report
 Parcels UC1 and UC2
 Hunters Point Shipyard
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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	147	02-D26-00-2D	7	00	C25	0183	10-Apr-09
UC1	147	02-D26-00-2D	8	00	C25	0183	10-Apr-09
UC1	147	02-D26-00-2D	9	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	10	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	11	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	12	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	13	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	14	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	15	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	16	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	17	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	18	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	19	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	20	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	21	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	22	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	23	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	24	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	25	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	26	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	27	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-2D	28	00	C26	0184	10-Apr-09
UC1	147	02-D26-00-4A	1	00	C06	0227	18-Jun-09
UC1	147	02-D26-00-4A	2	00	C06	0227	18-Jun-09
UC1	147	02-D26-00-4A	3	00	C06	0227	18-Jun-09
UC1	147	02-D26-00-4A	4	00	C06	0227	18-Jun-09
UC1	147	02-D26-00-4A	5	00	C06	0227	18-Jun-09
UC1	147	02-D26-00-4A	6	00	C06	0227	18-Jun-09
UC1	147	02-D26-00-4C	1	00	C01	0176	23-Mar-09
UC1	147	02-D26-00-4C	2	00	C01	0176	23-Mar-09
UC1	147	02-D26-00-4C	3	00	C01	0176	23-Mar-09
UC1	147	02-D26-00-4D	1	00	C01	0176	20-Mar-09
UC1	147	02-D26-00-4D	2	00	C01	0176	20-Mar-09
UC1	147	02-D26-00-4D	3	00	C01	0176	20-Mar-09
UC1	148	02-C15-00-1H	35	00	C13	0231	22-Jul-09
UC1	148	02-D15-00-1J	1	00	C14	0232	23-Jul-09
UC1	148	02-D15-00-2A	1	00	C22	0220	16-Jun-09

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 Parcels UC1 and UC2
 Hunters Point Shipyard
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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	148	02-D15-00-2A	2	00	C22	0220	16-Jun-09
UC1	148	02-D15-00-2A	3	00	C22	0220	16-Jun-09
UC1	148	02-D15-00-2A	4	00	C22	0220	16-Jun-09
UC1	148	02-D15-00-2A	5	00	C22	0220	16-Jun-09
UC1	148	02-D15-00-2A	6	00	C22	0220	16-Jun-09
UC1	148	02-D15-00-2A	7	00	C22	0220	16-Jun-09
UC1	148	02-D15-00-2A	8	00	C22	0220	16-Jun-09
UC1	148	02-D15-00-2A	9	00	C22	0220	16-Jun-09
UC1	148	02-D15-00-2A	10	00	C22	0220	16-Jun-09
UC1	148	02-D15-00-2A	11	00	C22	0220	16-Jun-09
UC1	148	02-D15-00-2A	12	00	C22	0220	16-Jun-09
UC1	148	02-D15-00-2A	13	00	C22	0220	16-Jun-09
UC1	148	02-D15-00-2A	14	00	C11	0226	16-Jun-09
UC1	148	02-D15-00-2A	15	00	C11	0226	16-Jun-09
UC1	148	02-D15-00-2A	16	00	C11	0226	16-Jun-09
UC1	148	02-D15-00-2A	17	00	C11	0226	16-Jun-09
UC1	148	02-D15-00-2A	18	00	C11	0226	16-Jun-09
UC1	148	02-D15-00-2A	19	00	C11	0226	16-Jun-09
UC1	148	02-D15-00-2A	20	00	C11	0226	16-Jun-09
UC1	148	02-D15-00-2A	21	00	C11	0226	16-Jun-09
UC1	148	02-D15-00-2A	22	00	C11	0226	16-Jun-09
UC1	148	02-D15-00-2A	23	00	C11	0226	16-Jun-09
UC1	148	02-D15-00-2A	24	00	C11	0226	16-Jun-09
UC1	148	02-D15-00-2A	25	00	C11	0226	16-Jun-09
UC1	148	02-D15-00-2A	26	00	C11	0226	16-Jun-09
UC1	148	02-D15-00-2A	27	00	C11	0226	16-Jun-09
UC1	148	02-D15-00-2A	28	00	C11	0226	16-Jun-09
UC1	148	02-D15-00-2A	29	00	C11	0226	16-Jun-09
UC1	148	02-D15-00-2A	30	00	C11	0226	16-Jun-09
UC1	148	02-D15-00-2A	31	00	C11	0226	17-Jun-09
UC1	148	02-D15-00-2A	32	00	C11	0226	17-Jun-09
UC1	148	02-D15-00-2A	33	00	C11	0226	17-Jun-09
UC1	148	02-D15-00-2A	34	00	C11	0226	17-Jun-09
UC1	148	02-D15-00-2A	35	00	C11	0226	17-Jun-09
UC1	148	02-D15-00-2A	36	00	C11	0226	17-Jun-09
UC1	148	02-D15-00-2A	37	00	C11	0226	17-Jun-09
UC1	148	02-D15-00-2A	38	00	C11	0226	17-Jun-09

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PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	148	02-D15-00-2A	39	00	C11	0226	17-Jun-09
UC1	148	02-D15-00-2A	40	00	C11	0226	17-Jun-09
UC1	148	02-D26-00-2A	92	00	C28	0224	15-Jun-09
UC1	148	02-D26-00-2A	93	00	C28	0224	15-Jun-09
UC1	148	02-D26-00-2A	94	00	C28	0224	15-Jun-09
UC1	148	02-D26-00-2A	95	00	C28	0224	15-Jun-09
UC1	148	02-D26-00-2A	96	00	C28	0224	15-Jun-09
UC1	148	02-D26-00-2A	97	00	C28	0224	15-Jun-09
UC1	148	02-D26-00-2A	98	00	C28	0224	15-Jun-09
UC1	148	02-D26-00-2A	99	00	C28	0224	15-Jun-09
UC1	148	02-D26-00-2A	100	00	C28	0224	15-Jun-09
UC1	148	02-D26-00-2A	101	00	C28	0224	15-Jun-09
UC1	148	02-D26-00-2A	102	00	C28	0224	15-Jun-09
UC1	148	02-D26-00-2A	103	00	C28	0224	15-Jun-09
UC1	148	02-D26-00-2A	104	00	C28	0224	15-Jun-09
UC1	148	02-D26-00-2A	105	00	C28	0224	15-Jun-09
UC1	148	02-D26-00-2A	106	00	C28	0224	15-Jun-09
UC2	149	02-C15-00-1F	131	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	132	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	133	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	134	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	135	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	136	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	137	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	138	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	139	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	140	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	141	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	142	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	143	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	144	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	145	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	146	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	147	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	148	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	149	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	150	00	C17	0219	10-Jun-09

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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	149	02-C15-00-1F	151	00	C17	0219	10-Jun-09
UC2	149	02-C15-00-1F	152	00	C22	0220	10-Jun-09
UC2	149	02-C15-00-1F	153	00	C22	0220	10-Jun-09
UC2	149	02-C15-00-1F	154	00	C22	0220	10-Jun-09
UC2	149	02-C15-00-1F	155	00	C22	0220	10-Jun-09
UC2	149	02-C15-00-1F	156	00	C22	0220	10-Jun-09
UC2	149	02-C15-00-1F	157	00	C22	0220	10-Jun-09
UC2	149	02-C15-00-1H	1	00	C22	0220	11-Jun-09
UC2	149	02-C15-00-1H	2	00	C22	0220	11-Jun-09
UC2	149	02-C15-00-1H	3	00	C22	0220	11-Jun-09
UC2	149	02-C15-00-1H	4	00	C22	0220	11-Jun-09
UC2	149	02-C15-00-1H	5	00	C22	0220	11-Jun-09
UC2	149	02-C15-00-1H	6	00	C22	0220	11-Jun-09
UC2	149	02-C15-00-1H	7	00	C22	0220	11-Jun-09
UC2	149	02-C15-00-1H	8	00	C22	0220	11-Jun-09
UC2	149	02-C15-00-1H	9	00	C22	0220	11-Jun-09
UC2	149	02-C15-00-1H	10	00	C22	0220	11-Jun-09
UC2	149	02-C15-00-1H	11	00	C22	0220	11-Jun-09
UC2	149	02-C15-00-1H	12	00	C03	0230	21-Jul-09
UC2	149	02-C15-00-1H	13	00	C03	0230	21-Jul-09
UC2	149	02-C15-00-1H	14	00	C03	0230	21-Jul-09
UC2	149	02-C15-00-1H	15	00	C03	0230	21-Jul-09
UC2	149	02-C15-00-1H	16	00	C03	0230	21-Jul-09
UC2	149	02-C15-00-1H	17	00	C03	0230	21-Jul-09
UC2	149	02-C15-00-1H	18	00	C03	0230	21-Jul-09
UC2	149	02-C15-00-1H	19	00	C03	0230	21-Jul-09
UC2	149	02-C15-00-1H	20	00	C03	0230	21-Jul-09
UC2	149	02-C15-00-1H	21	00	C03	0230	21-Jul-09
UC2	149	02-C15-00-1H	22	00	C03	0230	21-Jul-09
UC2	149	02-C15-00-1H	23	00	C03	0230	21-Jul-09
UC2	149	02-C15-00-1H	24	00	C03	0230	21-Jul-09
UC2	149	02-C15-00-1H	25	00	C03	0230	21-Jul-09
UC2	149	02-C15-00-1H	26	00	C03	0230	22-Jul-09
UC2	149	02-C15-00-1H	27	00	C03	0230	22-Jul-09
UC2	149	02-C15-00-1H	28	00	C03	0230	22-Jul-09
UC2	149	02-C15-00-1H	29	00	C03	0230	22-Jul-09
UC2	149	02-C15-00-1H	30	00	C03	0230	22-Jul-09

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Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC2	149	02-C15-00-1H	31	00	C03	0230	22-Jul-09
UC2	149	02-C15-00-1H	32	00	C03	0230	22-Jul-09
UC2	149	02-C15-00-1H	33	00	C13	0231	22-Jul-09
UC2	149	02-C15-00-1H	34	00	C13	0231	22-Jul-09
UC2	149	02-C15-00-1H	36	00	C13	0231	22-Jul-09
UC2	149	02-C15-00-1H	37	00	C13	0231	22-Jul-09
UC2	149	02-C15-00-1H	38	00	C13	0231	22-Jul-09
UC2	149	02-C15-00-1H	39	00	C13	0231	22-Jul-09
UC2	149	02-C15-00-1H	40	00	C13	0231	22-Jul-09
UC2	149	02-C15-00-1H	41	00	C13	0231	22-Jul-09
UC2	149	02-C15-00-1H	42	00	C13	0231	22-Jul-09
UC2	149	02-C15-00-1H	43	00	C13	0231	22-Jul-09
UC2	149	02-C15-00-1H	44	00	C13	0231	22-Jul-09
UC2	149	02-C15-00-1H	45	00	C13	0231	22-Jul-09
UC2	149	02-C15-00-2I	1	00	C01	0229	17-Jul-09
UC2	149	02-C15-00-2I	2	00	C01	0229	17-Jul-09
UC2	149	02-C15-00-2I	3	00	C01	0229	17-Jul-09
UC2	149	02-C15-00-2I	4	00	C01	0229	17-Jul-09
UC1	150	02-C15-00-4A	1	00	C13	0231	22-Jul-09
UC1	150	02-C15-00-4A	2	00	C13	0231	22-Jul-09
UC1	150	02-C15-00-4A	3	00	C13	0231	22-Jul-09
UC1	150	02-C15-00-4A	4	00	C13	0231	23-Jul-09
UC1	150	02-C15-00-4A	5	00	C13	0231	23-Jul-09
UC1	150	02-C15-00-4A	6	00	C13	0231	23-Jul-09
UC1	150	02-C15-00-4A	7	00	C13	0231	23-Jul-09
UC1	150	02-C15-00-4A	8	00	C13	0231	23-Jul-09
UC1	150	02-C15-00-4A	9	00	C13	0231	23-Jul-09
UC1	150	02-C15-00-4A	10	00	C13	0231	23-Jul-09
UC1	150	02-C15-00-4A	11	00	C13	0231	23-Jul-09
UC1	150	02-C15-00-4A	12	00	C13	0231	23-Jul-09
UC1	150	02-C15-00-4A	13	00	C13	0231	23-Jul-09
UC1	150	02-C15-00-4A	14	00	C14	0232	23-Jul-09
UC1	150	02-C15-00-4A	15	00	C14	0232	23-Jul-09
UC1	150	02-D15-00-1J	2	00	C14	0232	23-Jul-09
UC1	150	02-D15-00-1J	3	00	C14	0232	23-Jul-09
UC1	150	02-D15-00-1J	4	00	C14	0232	23-Jul-09
UC1	150	02-D15-00-1J	5	00	C14	0232	23-Jul-09

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Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	150	02-D15-00-1J	6	00	C14	0232	23-Jul-09
UC1	150	02-D15-00-1J	7	00	C14	0232	23-Jul-09
UC1	150	02-D15-00-1J	8	00	C14	0232	23-Jul-09
UC1	150	02-D15-00-1J	9	00	C14	0232	23-Jul-09
UC1	150	02-D15-00-1J	10	00	C14	0232	24-Jul-09
UC1	150	02-D15-00-1J	11	00	C14	0232	24-Jul-09
UC1	150	02-D15-00-1J	12	00	C14	0232	24-Jul-09
UC1	150	02-D15-00-1J	13	00	C14	0232	24-Jul-09
UC1	150	02-D15-00-1J	14	00	C14	0232	24-Jul-09
UC1	150	02-D15-00-1J	15	00	C14	0232	24-Jul-09
UC1	150	02-D15-00-1J	16	00	C14	0232	24-Jul-09
UC1	150	02-D15-00-1J	17	00	C14	0232	24-Jul-09
UC1	150	02-D15-00-1J	18	00	C14	0232	24-Jul-09
UC1	150	02-D15-00-1J	19	00	C14	0232	24-Jul-09
UC1	150	02-D15-00-1J	20	00	C14	0232	24-Jul-09
UC1	150	02-D15-00-4B	1	00	C14	0232	23-Jul-09
UC1	150	02-D15-00-4B	2	00	C14	0232	24-Jul-09
UC1	150	02-D15-00-4B	3	00	C14	0232	24-Jul-09
UC1	150	02-D15-00-4B	4	00	C14	0232	24-Jul-09
UC1	150	02-D15-00-4B	5	00	C14	0232	24-Jul-09
UC1	150	02-D15-00-4B	6	00	C14	0232	24-Jul-09
UC1	150	02-D15-00-4B	7	00	C14	0232	24-Jul-09
UC1	150	02-D15-00-4C	1	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	2	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	3	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	4	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	5	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	6	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	7	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	8	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	9	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	10	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	11	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	12	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	13	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	14	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	15	00	C01	0229	20-Jul-09

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Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	150	02-D15-00-4C	16	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	17	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	18	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	19	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	20	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	21	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	22	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	23	00	C01	0229	20-Jul-09
UC1	150	02-D15-00-4C	24	00	C13	0231	23-Jul-09
UC1	150	02-D15-00-4C	25	00	C13	0231	23-Jul-09
UC1	150	02-D15-00-4C	26	00	C14	0232	23-Jul-09
UC1	150	02-D26-00-1F	1	00	C01	0229	17-Jul-09
UC1	150	02-D26-00-1F	2	00	C01	0229	17-Jul-09
UC1	150	02-D26-00-1F	3	00	C01	0229	17-Jul-09
UC1	150	02-D26-00-1F	4	00	C01	0229	17-Jul-09
UC1	150	02-D26-00-1F	5	00	C01	0229	17-Jul-09
UC1	150	02-D26-00-1F	6	00	C01	0229	20-Jul-09
UC1	150	02-D26-00-1F	7	00	C01	0229	20-Jul-09
UC1	150	02-D26-00-1F	8	00	C01	0229	20-Jul-09
UC1	150	02-D26-00-1F	9	00	C01	0229	20-Jul-09
UC1	150	70-D17-00-3K	1	00	C16	0233	24-Jul-09
UC1	150	70-D17-00-3K	2	00	C16	0233	24-Jul-09
UC1	150	70-D17-00-3K	3	00	C16	0233	27-Jul-09
UC1	150	70-D17-00-3K	4	00	C16	0233	27-Jul-09
UC1	150	70-D17-00-3K	5	00	C16	0233	27-Jul-09
UC1	150	70-D17-00-3K	6	00	C16	0233	27-Jul-09
UC1	150	70-D17-00-3K	7	00	C16	0233	27-Jul-09
UC1	164	03-D16-00-1E	1	00	C23	0267	08-Mar-10
UC1	164	03-D16-00-1E	2	00	C23	0267	08-Mar-10
UC1	164	03-D16-00-1E	3	00	C23	0267	08-Mar-10
UC1	164	03-D16-00-1E	4	00	C23	0267	08-Mar-10
UC1	164	03-D16-00-1E	5	00	C23	0267	08-Mar-10
UC1	164	03-D16-00-1E	6	00	C23	0267	08-Mar-10
UC1	164	03-D16-00-1E	7	00	C23	0267	08-Mar-10
UC1	164	03-D16-00-1E	8	00	C23	0267	08-Mar-10
UC1	164	03-D16-00-1E	9	00	C23	0267	08-Mar-10

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PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	164	03-D16-00-1E	10	00	C23	0267	08-Mar-10
UC1	164	03-D16-00-1E	11	00	C23	0267	08-Mar-10
UC1	164	03-D16-00-1E	12	00	C23	0267	08-Mar-10
UC1	164	03-D16-00-1E	13	00	C23	0267	08-Mar-10
UC1	164	03-D16-00-1E	14	00	C23	0267	08-Mar-10
UC1	164	03-D16-00-1E	15	00	C23	0267	08-Mar-10
UC1	164	03-D16-00-1E	16	00	C23	0267	08-Mar-10
UC1	164	03-D16-00-1E	17	00	C23	0267	09-Mar-10
UC1	164	03-D16-00-1F	1	00	C23	0267	8-Mar-10
UC1	164	03-D16-00-1F	2	00	C23	0267	8-Mar-10
UC1	164	03-D16-00-1F	3	00	C23	0267	8-Mar-10
UC1	164	03-D16-00-1F	4	00	C23	0267	8-Mar-10
UC1	164	03-D16-00-1F	5	00	C23	0267	8-Mar-10
UC1	164	03-D16-00-1F	6	00	C23	0267	8-Mar-10
UC1	164	03-D16-00-1F	7	00	C23	0267	8-Mar-10
UC1	164	03-D16-00-1F	8	00	C23	0267	8-Mar-10
UC1	164	03-D16-00-1F	9	00	C23	0267	8-Mar-10
UC1	164	03-D16-00-1F	10	00	C23	0267	8-Mar-10
UC1	164	03-D16-00-1F	11	00	C23	0267	8-Mar-10
UC1	164	03-D16-00-1G	1	00	C33	0269	11-Mar-10
UC1	164	03-D16-00-1G	2	00	C33	0269	11-Mar-10
UC1	164	03-D16-00-1G	3	00	C33	0269	11-Mar-10
UC1	164	03-D16-00-1G	4	00	C33	0269	12-Mar-10
UC1	164	03-D16-00-1G	5	00	C33	0269	12-Mar-10
UC1	164	03-D16-00-1K	1	00	C33	0269	11-Mar-10
UC1	164	03-D16-00-1K	2	00	C33	0269	11-Mar-10
UC1	164	03-D16-36-1J	1	36	C16	0268	11-Mar-10
UC1	164	03-D16-36-8A	1	36	C16	0268	12-Mar-10
UC1	164	03-D16-36-8A	2	36	C16	0268	12-Mar-10
UC1	167	03-D16-00-1A	19	00	C37	0277	28-Apr-10
UC1	167	03-D16-00-1A	20	00	C37	0277	28-Apr-10
UC1	167	03-D16-00-1A	21	00	C37	0277	28-Apr-10
UC1	167	03-D16-00-1H	1	00	C31	0276	14-Apr-10
UC1	167	03-D16-00-1H	2	00	C31	0276	14-Apr-10
UC1	167	03-D16-00-1H	3	00	C31	0276	15-Apr-10
UC1	167	03-D16-00-1H	4	00	C31	0276	15-Apr-10
UC1	167	03-D16-00-1H	5	00	C31	0276	15-Apr-10

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TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	167	03-D16-00-1H	6	00	C31	0276	15-Apr-10
UC1	167	03-D16-00-1H	7	00	C31	0276	15-Apr-10
UC1	167	03-D16-00-1H	8	00	C31	0276	15-Apr-10
UC1	167	03-D16-00-1H	9	00	C35	0275	15-Apr-10
UC1	167	03-D16-00-1H	10	00	C35	0275	15-Apr-10
UC1	167	03-D16-00-1H	11	00	C35	0275	15-Apr-10
UC1	167	03-D16-00-1H	12	00	C35	0275	15-Apr-10
UC1	167	03-D16-00-1H	13	00	C35	0275	15-Apr-10
UC1	167	03-D16-00-1H	14	00	C35	0275	15-Apr-10
UC1	167	03-D16-00-1H	15	00	C35	0275	15-Apr-10
UC1	167	03-D16-00-1H	16	00	C35	0275	15-Apr-10
UC1	167	03-D16-00-1H	23	00	C35	0275	19-Apr-10
UC1	167	03-D16-00-1H	24	00	C35	0275	19-Apr-10
UC1	167	03-D16-00-1H	25	00	C35	0275	19-Apr-10
UC1	167	03-D16-00-1H	26	00	C37	0277	21-Apr-10
UC1	167	03-D16-00-1H	27	00	C37	0277	28-Apr-10
UC1	167	03-D16-00-1H	28	00	C22	0280	30-Apr-10
UC1	167	03-D16-00-1H	29	00	C22	0280	30-Apr-10
UC1	167	03-D16-00-1H	30	00	C22	0280	30-Apr-10
UC1	167	03-D16-00-1I	1	00	C35	0275	19-Apr-10
UC1	167	03-D16-00-1I	2	00	C37	0277	19-Apr-10
UC1	167	03-D16-00-1I	3	00	C37	0277	19-Apr-10
UC1	167	03-D16-00-1I	4	00	C37	0277	19-Apr-10
UC1	167	03-D16-00-1I	5	00	C37	0277	19-Apr-10
UC1	167	03-D16-00-1I	6	00	C37	0277	19-Apr-10
UC1	167	03-D16-00-1I	7	00	C37	0277	19-Apr-10
UC1	167	03-D16-00-1I	8	00	C37	0277	19-Apr-10
UC1	167	03-D16-00-1I	9	00	C37	0277	19-Apr-10
UC1	167	03-D16-00-1I	10	00	C37	0277	19-Apr-10
UC1	167	03-D16-00-1I	11	00	C37	0277	19-Apr-10
UC1	167	03-D16-00-1I	12	00	C37	0277	19-Apr-10
UC1	167	03-D16-00-1I	13	00	C37	0277	19-Apr-10
UC1	167	03-D16-00-1I	14	00	C37	0277	19-Apr-10
UC1	167	03-D16-00-1I	15	00	C37	0277	21-Apr-10
UC1	168	03-D16-00-1B	1	00	C21	0272	07-Apr-10
UC1	168	03-D16-00-1B	2	00	C21	0272	07-Apr-10
UC1	168	03-D16-00-1B	3	00	C21	0272	07-Apr-10

Final Removal Action Completion Report
 Parcels UC1 and UC2
 Hunters Point Shipyard
 DCN: ECSD-3211-0018-0174
 CTO No. 0018

TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	168	03-D16-00-1B	4	00	C21	0272	07-Apr-10
UC1	168	03-D16-00-1B	5	00	C21	0272	07-Apr-10
UC1	168	03-D16-00-1B	6	00	C36	0273	07-Apr-10
UC1	168	03-D16-00-1B	7	00	C21	0272	07-Apr-10
UC1	168	03-D16-00-1B	8	00	C21	0272	07-Apr-10
UC1	168	03-D16-00-1B	9	00	C36	0273	07-Apr-10
UC1	168	03-D16-00-1B	10	00	C21	0272	07-Apr-10
UC1	168	03-D16-00-1B	11	00	C21	0272	07-Apr-10
UC1	168	03-D16-00-1B	12	00	C21	0272	07-Apr-10
UC1	168	03-D16-00-1B	13	00	C36	0273	07-Apr-10
UC1	168	03-D16-00-1B	14	00	C36	0273	07-Apr-10
UC1	168	03-D16-00-1B	15	00	C21	0272	07-Apr-10
UC1	168	03-D16-00-1B	16	00	C36	0273	07-Apr-10
UC1	168	03-D16-00-1B	17	00	C36	0273	07-Apr-10
UC1	168	03-D16-00-1B	18	00	C36	0273	07-Apr-10
UC1	168	03-D16-00-1B	19	00	C21	0272	07-Apr-10
UC1	168	03-D16-00-1B	20	00	C21	0272	07-Apr-10
UC1	168	03-D16-00-1B	21	00	C27	0274	07-Apr-10
UC1	168	03-D16-00-1B	22	00	C36	0273	07-Apr-10
UC1	168	03-D16-00-1B	23	00	C36	0273	07-Apr-10
UC1	168	03-D16-00-1B	24	00	C36	0273	07-Apr-10
UC1	168	03-D16-00-1B	25	00	C36	0273	08-Apr-10
UC1	168	03-D16-00-1B	26	00	C36	0273	08-Apr-10
UC1	168	03-D16-00-1B	27	00	C36	0273	08-Apr-10
UC1	168	03-D16-00-1B	28	00	C27	0274	08-Apr-10
UC1	168	03-D16-00-1B	29	00	C27	0274	08-Apr-10
UC1	168	03-D16-00-1B	30	00	C36	0273	08-Apr-10
UC1	168	03-D16-00-1B	31	00	C36	0273	08-Apr-10
UC1	168	03-D16-00-1B	32	00	C27	0274	08-Apr-10
UC1	168	03-D16-00-1B	33	00	C29	0279	28-Apr-10
UC1	168	03-D16-00-1B	34	00	C37	0277	28-Apr-10
UC1	168	03-D16-00-1B	35	00	C37	0277	28-Apr-10
UC1	168	03-D16-00-1B	36	00	C22	0280	28-Apr-10
UC1	168	03-D16-00-1B	37	00	C22	0280	29-Apr-10
UC1	168	03-D16-00-1B	38	00	C29	0279	30-Apr-10
UC1	168	03-D16-00-1D	1	00	C36	0273	08-Apr-10
UC1	168	03-D16-00-1D	2	00	C27	0274	08-Apr-10

Final Removal Action Completion Report
 Parcels UC1 and UC2
 Hunters Point Shipyard
 DCN: ECSD-3211-0018-0174
 CTO No. 0018

TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	168	03-D16-00-1D	3	00	C27	0274	08-Apr-10
UC1	168	03-D16-00-1D	4	00	C36	0273	08-Apr-10
UC1	168	03-D16-00-1D	5	00	C31	0276	13-Apr-10
UC1	168	03-D16-00-1D	6	00	C31	0276	13-Apr-10
UC1	168	03-D16-00-1D	7	00	C31	0276	13-Apr-10
UC1	168	03-D16-00-1D	8	00	C31	0276	13-Apr-10
UC1	168	03-D16-00-1D	9	00	C31	0276	13-Apr-10
UC1	168	03-D16-00-1D	10	00	C31	0276	13-Apr-10
UC1	168	03-D16-00-1D	11	00	C31	0276	13-Apr-10
UC1	168	03-D16-00-1D	12	00	C31	0276	13-Apr-10
UC1	168	03-D16-00-1D	13	00	C31	0276	13-Apr-10
UC1	168	03-D16-00-1D	14	00	C31	0276	13-Apr-10
UC1	168	03-D16-00-1D	15	00	C31	0276	13-Apr-10
UC1	168	03-D16-00-1D	16	00	C31	0276	13-Apr-10
UC1	168	03-D16-00-1D	17	00	C31	0276	13-Apr-10
UC1	168	03-D16-00-1D	18	00	C27	0274	15-Apr-10
UC1	168	03-D16-00-1D	19	00	C27	0274	15-Apr-10
UC1	168	03-D16-00-1D	20	00	C27	0274	15-Apr-10
UC1	168	03-D16-00-1D	21	00	C27	0274	15-Apr-10
UC1	168	03-D16-00-1D	22	00	C27	0274	15-Apr-10
UC1	168	03-D16-00-1D	23	00	C35	0275	15-Apr-10
UC1	168	03-D16-00-1D	24	00	C35	0275	15-Apr-10
UC1	168	03-D16-00-1D	25	00	C35	0275	15-Apr-10
UC1	168	03-D16-00-1D	26	00	C37	0277	21-Apr-10
UC1	168	03-D16-00-1D	27	00	C37	0277	21-Apr-10
UC1	168	03-D16-00-1D	28	00	C37	0277	21-Apr-10
UC1	168	03-D16-00-1D	29	00	C37	0277	21-Apr-10
UC1	168	03-D16-00-1D	30	00	C37	0277	21-Apr-10
UC1	168	03-D16-00-1D	31	00	C22	0280	30-Apr-10
UC1	168	03-D16-00-1D	32	00	C22	0280	30-Apr-10
UC1	168	03-D16-00-1D	33	00	C22	0280	30-Apr-10
UC1	168	03-D16-00-1D	34	00	C22	0280	30-Apr-10
UC1	168	03-D16-00-1H	17	00	C35	0275	16-Apr-10
UC1	168	03-D16-00-1H	18	00	C35	0275	16-Apr-10
UC1	168	03-D16-00-1H	19	00	C35	0275	16-Apr-10
UC1	168	03-D16-00-1H	20	00	C35	0275	16-Apr-10
UC1	168	03-D16-00-1H	21	00	C35	0275	16-Apr-10

Final Removal Action Completion Report
 Parcels UC1 and UC2
 Hunters Point Shipyard
 DCN: ECSD-3211-0018-0174
 CTO No. 0018

TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	168	03-D16-00-1H	22	00	C35	0275	16-Apr-10
UC1	171	03-D16-00-1A	1	00	C12	0271	05-Apr-10
UC1	171	03-D16-00-1A	2	00	C12	0271	05-Apr-10
UC1	171	03-D16-00-1A	3	00	C12	0271	05-Apr-10
UC1	171	03-D16-00-1A	4	00	C12	0271	05-Apr-10
UC1	171	03-D16-00-1A	5	00	C12	0271	05-Apr-10
UC1	171	03-D16-00-1A	6	00	C12	0271	05-Apr-10
UC1	171	03-D16-00-1A	7	00	C12	0271	05-Apr-10
UC1	171	03-D16-00-1A	8	00	C12	0271	06-Apr-10
UC1	171	03-D16-00-1A	9	00	C12	0271	06-Apr-10
UC1	171	03-D16-00-1A	10	00	C12	0271	06-Apr-10
UC1	171	03-D16-00-1A	11	00	C21	0272	06-Apr-10
UC1	171	03-D16-00-1A	12	00	C21	0272	06-Apr-10
UC1	171	03-D16-00-1A	13	00	C21	0272	06-Apr-10
UC1	171	03-D16-00-1A	14	00	C21	0272	06-Apr-10
UC1	171	03-D16-00-1A	15	00	C21	0272	06-Apr-10
UC1	171	03-D16-00-1A	16	00	C21	0272	06-Apr-10
UC1	171	03-D16-00-1A	17	00	C21	0272	06-Apr-10
UC1	171	03-D16-00-1A	18	00	C21	0272	06-Apr-10
UC1	171	03-D16-00-1C	1	00	C27	0274	08-Apr-10
UC1	171	03-D16-00-1C	2	00	C27	0274	08-Apr-10
UC1	171	03-D16-00-1C	3	00	C27	0274	08-Apr-10
UC1	171	03-D16-00-1C	4	00	C27	0274	08-Apr-10
UC1	171	03-D16-00-1C	5	00	C27	0274	08-Apr-10
UC1	171	03-D16-00-1C	6	00	C27	0274	08-Apr-10
UC1	171	03-D16-00-1C	7	00	C27	0274	08-Apr-10
UC1	171	03-D16-00-1C	8	00	C27	0274	08-Apr-10
UC1	171	03-D16-00-1C	9	00	C27	0274	08-Apr-10
UC1	171	03-D16-00-1C	10	00	C36	0273	08-Apr-10
UC1	171	03-D16-00-1C	11	00	C36	0273	08-Apr-10
UC1	171	03-D16-00-1C	12	00	C27	0274	09-Apr-10
UC1	171	03-D16-00-1C	13	00	C27	0274	09-Apr-10
UC1	171	03-D16-00-1C	14	00	C27	0274	09-Apr-10
UC1	171	03-D16-00-1C	15	00	C36	0273	09-Apr-10
UC1	171	03-D16-00-1C	16	00	C36	0273	09-Apr-10
UC1	171	03-D16-00-1C	17	00	C36	0273	09-Apr-10
UC1	171	03-D16-00-1C	18	00	C36	0273	09-Apr-10

Final Removal Action Completion Report
 Parcels UC1 and UC2
 Hunters Point Shipyard
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 CTO No. 0018

TABLE 3-3

PARCELS UC1 AND UC2 EXCAVATED SOIL

Parcel	Survey Unit ID No.	Trench Segment ID No.	Truckload No.	IR Program Site ^a	RSY2 Screening Pad No.	ES Unit No.	Date Excavated
UC1	171	03-D16-00-1C	19	00	C36	0273	09-Apr-10
UC1	171	03-D16-00-1C	20	00	C36	0273	09-Apr-10
UC1	171	03-D16-00-1C	21	00	C36	0273	09-Apr-10
UC1	171	03-D16-00-1C	22	00	C35	0275	09-Apr-10
UC1	171	03-D16-00-1C	23	00	C35	0275	09-Apr-10
UC1	171	03-D16-00-1C	24	00	C35	0275	13-Apr-10
UC1	171	03-D16-00-1C	25	00	C35	0275	13-Apr-10
UC1	171	03-D16-00-1C	26	00	C35	0275	13-Apr-10
UC1	171	03-D16-00-1C	27	00	C35	0275	13-Apr-10
UC1	171	03-D16-00-1C	28	00	C27	0274	13-Apr-10
UC1	171	03-D16-00-1C	29	00	C22	0280	04-May-10
UC1	171	03-D16-00-1E	18	00	C10	0281	14-Jun-10
UC1	171	03-D16-00-1E	19	00	C10	0281	14-Jun-10
UC1	171	03-D16-00-1E	20	00	C10	0281	14-Jun-10
UC1	171	03-D16-00-1E	21	00	C10	0281	14-Jun-10
UC1	171	03-D16-00-8B	1	00	C21	0272	06-Apr-10
UC1	171	03-D16-00-8B	2	00	C21	0272	06-Apr-10
UC1	171	03-D16-00-8B	3	00	C21	0272	07-Apr-10
UC1	171	03-D16-00-8B	4	00	C21	0272	07-Apr-10
UC1	171	03-D16-00-8B	5	00	C21	0272	07-Apr-10
UC1	171	03-D16-00-8B	6	00	C27	0274	08-Apr-10

Notes:

^a "00" indicates the stockpile was not derived from an IR Program area.

Abbreviations and Acronyms:

ES – excavated soil

IR – Installation Restoration (Program)

RSY2 – Radiological Screening Yard 2

TABLE 3-4

PARCELS UC1 AND UC2 EXCAVATED SOIL PROCESSING SUMMARY

ES Unit No.	Screening Pad No.	Gamma Scan Performed	Total Soil Samples Collected	Identified ROC	Elevated Sample Results (pCi/g)	Soil Volume Remediated (cy)	ES Unit Disposition
0176	C01	03-Apr-09	36	NA	NA	0	Non-LLRW ^a
0177	C19	03-Apr-09	62	Ra-226	1.5901	5	Non-LLRW ^a
0178	C20	06-Apr-09	36	NA	NA	0	Backfilled ^b
0179	C21	09-Apr-09	21	NA	NA	0	Backfilled ^b
0180	C22	21-Apr-09	59	Ra-226	2.115	25	Backfilled ^b
0181	C23	13-Apr-09	69	Ra-226	1.5009 1.8213 1.6953 1.7923 1.7225 1.9360	100.5	Backfilled ^b
0182	C24	14-Apr-09	52	Ra-226	2.1645 1.7735	77	Non-LLRW ^a
0183	C25	15-Apr-09	39	NA	NA	0	Backfilled ^b
0184	C26	16-Apr-09	21	NA	NA	0	Backfilled ^b
0185	C27	17-Apr-09	60	Ra-226	2.4570 2.0360 1.4914 2.1483	64	Backfilled ^b

TABLE 3-4

PARCELS UC1 AND UC2 EXCAVATED SOIL PROCESSING SUMMARY

ES Unit No.	Screening Pad No.	Gamma Scan Performed	Total Soil Samples Collected	Identified ROC	Elevated Sample Results (pCi/g)	Soil Volume Remediated (cy)	ES Unit Disposition
0186	C28	21-Apr-09	84	Ra-226	1.8133 1.9934 1.5142 2.1875 2.0172 1.5321	70	Backfilled ^b
0187	C29	27-Apr-09	22	NA	NA	0	Backfilled ^b
0188	C32	29-Apr-09	56	Ra-226	1.8519	6	Backfilled ^b
0189	C30	27-Apr-09	26	NA	NA	0	Backfilled ^b
0190	C31	27-Apr-09	29	NA	NA	0	Backfilled ^b
0191	C34	07-May-09	36	NA	NA	0	Backfilled ^b
0192	C36	30-Apr-09	54	Ra-226	2.4765 1.6114	22	Backfilled ^b
0193	C37	07-May-09	65	Ra-226	1.5487 1.6208 1.8482 1.8105 2.3395 1.7165	38.5	Backfilled ^b

TABLE 3-4

PARCELS UC1 AND UC2 EXCAVATED SOIL PROCESSING SUMMARY

ES Unit No.	Screening Pad No.	Gamma Scan Performed	Total Soil Samples Collected	Identified ROC	Elevated Sample Results (pCi/g)	Soil Volume Remediated (cy)	ES Unit Disposition
0194	C02	08-May-09	59	Ra-226	1.8086 1.7499 1.5909 1.6420 1.8448 1.9344	52	Backfilled ^b
0195	C03	08-May-09	55	Ra-226	1.4909 1.7932 1.7687 1.8976	45	Backfilled ^b
0196	C04	11-May-09	28	NA	NA	0	Backfilled ^b
0197	C05	11-May-09	24	NA	NA	0	Backfilled ^b
0198	C06	12-May-09	36	NA	NA	0	Backfilled ^b
0200	C09	17-Jun-09	33	NA	NA	0	Backfilled ^b
0201	C10	12-May-09	26	NA	NA	0	Backfilled ^b
0202	C11	14-May-09	29	NA	NA	0	Backfilled ^b
0203	C12	15-May-09	47	Ra-226	1.5597	1.5	Backfilled ^b
0204	C13	15-May-09	23	NA	NA	0	Non-LLRW ^a
0205	C14	19-May-09	28	NA	NA	0	Non-LLRW ^a
0206	C15	20-May-09	24	NA	NA	0	Non-LLRW ^a
0207	C16	20-May-09	22	NA	NA	0	Backfilled ^b
0208	C20	21-May-09	24	NA	NA	0	Backfilled ^b

Final Removal Action Completion Report
 Parcels UC1 and UC2
 Hunters Point Shipyard
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TABLE 3-4

PARCELS UC1 AND UC2 EXCAVATED SOIL PROCESSING SUMMARY

ES Unit No.	Screening Pad No.	Gamma Scan Performed	Total Soil Samples Collected	Identified ROC	Elevated Sample Results (pCi/g)	Soil Volume Remediated (cy)	ES Unit Disposition
0209	C33	21-May-09	28	NA	NA	0	Backfilled ^b
0210	C35	28-May-09	36	NA	NA	0	Backfilled ^b
0211	C24	28-May-09	36	NA	NA	0	Backfilled ^b
0212	C25	01-Jun-09	54	Cs-137	0.11899	12	Backfilled ^b
0213	C01	02-Jun-09	29	NA	NA	0	Non-LLRW ^a
0214	C31	05-Jun-09	31	NA	NA	0	Backfilled ^b
0215	C27	08-Jun-09	36	NA	NA	0	Backfilled ^b
0216	C30	11-Jun-09	36	NA	NA	0	Backfilled ^b
0217	C21	11-Jun-09	36	NA	NA	0	Backfilled ^b
0218	C19	12-Jun-09	36	NA	NA	0	Non-LLRW ^a
0219	C17	15-Jun-09	55	Ra-226	1.9628	5	Non-LLRW ^a
0220	C22	19-Jun-09	36	NA	NA	0	Non-LLRW ^a
0221	C04	17-Jun-09	54	Cs-137	0.1196	4	Backfilled ^b
0222	C05	17-Jun-09	48	Cs-137	0.12136	2	Backfilled ^b
0224	C28	18-Jun-09	36	NA	NA	NA	Backfilled ^b
0226	C11	18-Jun-09	61	Ra-226	1.7173 1.7910	10.5	Backfilled ^b
0227	C06	23-Jun-09	21	NA	NA	0	Backfilled ^b
0228	C36	07-Jul-09	20	NA	NA	0	Backfilled ^b
0230	C03	27-Jul-09	36	NA	NA	NA	Backfilled ^b

TABLE 3-4

PARCELS UC1 AND UC2 EXCAVATED SOIL PROCESSING SUMMARY

ES Unit No.	Screening Pad No.	Gamma Scan Performed	Total Soil Samples Collected	Identified ROC	Elevated Sample Results (pCi/g)	Soil Volume Remediated (cy)	ES Unit Disposition
0231	C13	27-Jul-09	28	NA	NA	NA	Non-LLRW ^a
0232	C14	29-Jul-09	28	NA	NA	0	Backfilled ^b
0233	C16	04-Aug-09	67	Ra-226	1.5455 1.5585	19	Backfilled ^b
0267	C23	15-Mar-10	28	NA	NA	0	Backfilled ^b
0268	C16	24-Mar-10	20	NA	NA	0	Non-LLRW ^c
0269	C33	24-Mar-10	40	Ra-226	1.4951	19	Non-LLRW ^d
0271	C12	07-Apr-10	71	Ra-226	1.9078 2.2667 2.6227 1.7800	27	Backfilled ^b
0272	C21	09-Apr-10	46	Ra-226	2.4842 1.8639	18	Backfilled ^b
0273	C36	16-Apr-10	20	NA	NA	0	Non-LLRW ^c
0274	C27	19-Apr-10	44	Cs-137	0.12744	7	Non-LLRW ^c
0275	C35	23-Apr-10	20	NA	NA	0	Non-LLRW ^c
0276	C31	19-Apr-10	21	NA	NA	0	Backfilled ^b
0277	C37	30-Apr-10	18	NA	NA	0	Non-LLRW ^c
0279	C29	24-May-10	36	Cs-137 Cs-137 Ra-226	0.13556 0.16916 1.5157 to 3.2976	236	Non-LLRW ^c
0280	C22	04-Jun-10	20	NA	NA	0	Non-LLRW ^c

Final Removal Action Completion Report
 Parcels UC1 and UC2
 Hunters Point Shipyard
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TABLE 3-4

PARCELS UC1 AND UC2 EXCAVATED SOIL PROCESSING SUMMARY

ES Unit No.	Screening Pad No.	Gamma Scan Performed	Total Soil Samples Collected	Identified ROC	Elevated Sample Results (pCi/g)	Soil Volume Remediated (cy)	ES Unit Disposition
0281	C10	23-Jun-10	36	Cs-137 Ra-226	0.11923 1.48098 to 1.9504	18	Backfilled ^b

Notes:

^a Radiologically surveyed and released and used as grading material on HPS with the concurrence of the RASO.

^b Radiologically surveyed and released and backfilled into one or more trench survey units.

^c Radiologically surveyed and released and disposed of off-site by the DON's non-radiological waste contractor.

^d Radiologically surveyed and released pending on-site reuse.

Abbreviations and Acronyms:

Cs-137 – cesium-137

ES – excavated soil

pCi/g – picocuries per gram

ROC – radionuclide of concern

cy – cubic yard

NA – not applicable

Ra-226 – radium-226

RSY2 – Radiological Screening Yard 2

TABLE 3-5
PARCELS UC1 AND UC2
PIPE AND MANHOLE CONTAMINATED SEDIMENT SAMPLE ANALYTICAL RESULTS

Trench Segment ID No.	Component	Date Excavated	Sample ID No.	Elevated ROC	Elevated Activity (pCi/g)
02-C15-00-1E	MH254	13-May-09	MH0007	Ra-226	2.1141
02-D26-00-3F	01	01-Apr-09	PI0003	Cs-137	0.30857
02-D26-00-3F	02	02-Apr-09	PI0004	Cs-137	0.23233
02-D26-00-3F	04	06-Apr-09	PI0006	Cs-137 Ra-226	0.20915 1.6422
02-D26-00-3F	05	07-Apr-09	PI0007	Cs-137	0.11595
02-D26-00-2D	01	10-Apr-09	PI0008	Cs-137	0.16997
02-D26-00-2C	01	13-Apr-09	PI0009	Cs-137	0.22211
02-D26-00-2C	03	15-Apr-09	PI0011	Ra-226	1.757
02-D26-00-2C	05	16-Apr-09	PI0013	Cs-137	0.11796
02-C15-00-1C	02	07-May-09	PI0016	Ra-226	1.8093
02-C15-00-1C	03	08-May-09	PI0017	Ra-226	2.3132
03-D16-00-1C	01	9-Apr-10	PI0017	Cs-137	0.12101
02-C15-00-1C	05	11-May-09	PI0019	Ra-226	2.2892
02-C15-00-1E	02	12-May-09	PI0021	Cs-137	0.16447
02-C15-00-1E	04	14-May-09	PI0023	Cs-137	0.18515
02-C15-00-2D	01	21-May-09	PI0026	Ra-226	2.3489
02-C15-00-1E	07	27-May-09	PI0027	Cs-137	0.14687
02-C15-00-1E	09	28-May-09	PI0029	Cs-137	0.23433
02-C15-00-1F	01	01-Jun-09	PI0031	Cs-137	0.22772
02-C15-00-1F	04	08-Jun-09	PI0034	Cs-137	0.34159
02-C15-00-1F	05	08-Jun-09	PI0035	Cs-137	0.18611
02-C15-00-1F	06	09-Jun-09	PI0036	Cs-137	0.2663
02-C15-00-1F	07	09-Jun-09	PI0037	Cs-137	0.1469
02-C15-00-1F	08	09-Jun-09	PI0038	Cs-137	0.23235
02-D26-00-2A	01	11-Jun-09	PI0042	Cs-137	0.13271
02-D26-00-2A	04	15-Jun-09	PI0045	Cs-137	0.16077
02-D15-00-2A	01	16-Jun-09	PI0046	Cs-137	0.29176
02-D15-00-2A	02	17-Jun-09	PI0047	Cs-137	0.15538
02-D15-00-1J	01	23-Jul-09	PI0051	Cs-137	0.14951
02-D15-00-4B	02	24-Jul-09	PI0052	Cs-137	0.16047

Abbreviations and Acronyms:

Cs-137 – cesium-137

MH – manhole

pCi/g – picocuries per gram

PI – piping

Ra-226 – radium-226

ROC – radionuclide of concern

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TABLE 3-6

PARCELS UC1 AND UC2

STORM DRAIN AND SANITARY SEWER PIPING REMAINING IN PLACE

Survey Unit	Trench Segment Remaining in Place	Type	Linear Feet of Pipe	
			Remaining In Place	Removed
SU133	02-D26-00-2G	Sanitary Sewer	9 ^a	53
SU143	02-C15-00-8E	Storm Drain	5 ^a	205
SU144	02-C15-00-8A	Storm Drain	33 ^b	2
	02-C15-00-2B	Storm Drain	40 ^b	0
	02-C15-00-2C	Storm Drain	40 ^b	0
SU145	02-C15-00-1D	Sanitary Sewer	37 ^b	77
SU164	03-D16-00-1G	Storm Drain	13 ^c	13
SU167	03-D16-00-1A	Storm Drain	25 ^a	114
Parcel UC2 (Robinson Street)	NA	Sanitary Sewer	367 ^d	0
	NA	Storm Drain	489 ^d	0

Notes:^a Linear feet is estimated based on historical drawings.^b Linear feet is an engineering estimate based on field observations.^c Terminated due to presence of active utility pole obstruction.^d Not excavated at the request of the City of San Francisco.**Abbreviations and Acronyms:**

NA – not applicable

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TABLE 3-7

PARCELS UC1 AND UC2 TRENCH SURVEY UNIT REMEDIATION

Survey Unit No.	Trench Segment ID No.	Date Removed	Soil Remediated (cy)	LLRW Bin No. ^a
133	02-D26-00-3F	01-Jun-09	4	GFLU001149G11
136	02-C15-00-1A	19-May-09	8	BKRU026385G11
136	02-C15-00-1A	19-May-09	8	BKRU026198G3
136	02-C15-00-1A	19-May-09	14	BFLU000348G11
136	02-C15-00-1B	19-May-09	5	BKRU026385G11
136	02-C15-00-1C	19-May-09	5	BKRU026198G3
136	02-C15-00-1A	26-May-09	14	GFLU001059G10
136	02-C15-00-1A	26-May-09	5	GFLU001209G10
136	02-C15-00-1A	26-May-09	2	BKRU026385G11
136	02-C15-00-1A	26-May-09	9	GFLU001276G10
136	02-C15-00-1B	26-May-09	2	BFLU000348G11
136	02-C15-00-1A	09-Jun-09	6	GFLU001039G11
136	02-C15-00-1B	09-Jun-09	7	BFLU000288G10
136	02-C15-00-1A	12-Jun-09	9	GFLU001039G11
136	02-C15-00-1A	12-Jun-09	8	BFLU000288G10
136	02-C15-00-1A	12-Jun-09	15	GFLU001146G4
136	02-C15-00-1A	12-Jun-09	15	GFLU001157G11
136	02-C15-00-1A	12-Jun-09	12	GFLU001279G9
136	02-C15-00-1A	26-Jun-09	16	BKRU025012G11
136	02-C15-00-1A	02-Jul-09	4	BKRU025972G9
136	02-C15-00-1A	21-Jul-09	7	GFLU001173G4
136	02-C15-00-1B	31-Jul-09	4	GFLU001173G4
136	02-C15-00-1B	31-Jul-09	11	BFLU000139G9
136	02-C15-00-1B	31-Jul-09	1	BKRU012993G8
136	02-C15-00-1B	11-Aug-09	2	BKRU012993G8
136	02-C15-00-1C	11-Aug-09	2	BKRU012993G8
136	02-C15-00-1A	12-Aug-09	1	BKRU012993G8
136	02-C15-00-1B	12-Aug-09	2	BKRU012993G8
136	02-C15-00-1C	12-Aug-09	6	BKRU012993G8
136	02-C15-00-1C	13-Aug-09	4	GFLU001244G4
136	02-C15-00-1A	17-Aug-09	2	GFLU001244G4
139	02-D26-00-3A	19-Jun-09	2	BKRU025819G4
140	02-D26-00-1G	01-Jul-09	3	GFLU001191G3
146	02-D26-00-3F	29-Jul-09	3	GFLU001221G3
148	02-D15-00-2A	13-Aug-09	4	BKRU026006G6
148	02-D15-00-2A	25-Aug-09	4	GFLU001212G9
148	02-D15-00-2A	25-Aug-09	5	BKRU025599G3

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TABLE 3-7

PARCELS UC1 AND UC2 TRENCH SURVEY UNIT REMEDIATION

Survey Unit No.	Trench Segment ID No.	Date Removed	Soil Remediated (cy)	LLRW Bin No. ^a
148	02-D15-00-2A	03-Sep-09	4	GFLU001170G11
148	02-D15-00-2A	14-Sep-09	3	GFLU001169G10
148	02-D26-00-2A	14-Sep-09	3	GFLU001169G10
148	02-D26-00-2A	17-Sep-09	5	GFLU001169G10
150	02-D15-00-4B	19-Aug-09	1	BFLU000357G5
150	02-D15-00-4B	19-Aug-09	1	BKRU026006G6
150	02-D15-00-4B	19-Aug-09	2	GFLU001212G9
150	70-D17-00-3K	19-Aug-09	2	BFLU000357G5
150	70-D17-00-3K	19-Aug-09	6	BKRU026006G6
150	70-D17-00-3K	24-Aug-09	2	GFLU001212G9
164	03-D16-00-1E	29-Mar-10	1	GFLU001189G12
168	03-D16-00-1H	20-May-10	2.5	BFLU000353G9
171	03-D16-00-1C	07-Jun-10	3	BFLU000396G13

Notes:

^a LLRW bins were disposed of off-site at either the U.S. Ecology facility in Idaho or the Energy Solutions facility in Clive, Utah.

Abbreviations and Acronyms:

cy – cubic yard

LLRW – low-level radioactive waste

TABLE 3-8

**PARCELS UC1 AND UC2 PIPE AND MANHOLE LLRW
BIN DISPOSAL SUMMARY**

Component	Trench Segment ID No.	LLRW Bin^a	Disposal Date
Pipe	02-C15-00-1A	GFLU001126G4	04-May-09
Pipe	02-C15-00-1C	GFLU001262G10	12-May-09
		GFLU001021G9	11-May-09
		GFLU001037G8	11-May-09
		GFLU001172G11	08-May-09
		GFLU001126G4	04-May-09
		GFLU001244G3	01-May-09
Pipe	02-C15-00-1E	GFLU001165G10	01-Jun-09
		GFLU001159G9	29-May-09
		GFLU001196G9	29-May-09
		MHFU001330G7	29-May-09
		BKRU012926G3	15-May-09
		BKRU025624G10	15-May-09
		GFLU001164G9	15-May-09
		BKRU025012G10	14-May-09
		GFLU001081G10	14-May-09
		GFLU001225G2	14-May-09
Pipe	02-C15-00-1F	BFLU000396G10	11-Jun-09
		GFLU001016G9	11-Jun-09
		GFLU001031G9	11-Jun-09
		GFLU001043G11	11-Jun-09
		GFLU001250G11	11-Jun-09
		BFLU000349G10	10-Jun-09
		BKRU025997G10	10-Jun-09
		GFLU001127G10	10-Jun-09
		GFLU001278G10	10-Jun-09
		GFLU001200G9	02-Jun-09
Pipe	02-C15-00-1H	GFLU001190G3	05-Aug-09
		BKRU025441G3	15-Jun-09
		BFLU000396G10	11-Jun-09
Pipe	02-C15-00-2D	GFLU001023G11	27-May-09
Pipe	02-C15-00-2F	GFLU001159G9	29-May-09
Pipe	02-C15-00-2H	GFLU001159G9	29-May-09
Pipe	02-C15-00-2I	GFLU001250G11	11-Jun-09
Pipe	02-C15-00-4A	BKRU012926G4	03-Aug-09

TABLE 3-8

**PARCELS UC1 AND UC2 PIPE AND MANHOLE LLRW
BIN DISPOSAL SUMMARY**

Component	Trench Segment ID No.	LLRW Bin^a	Disposal Date
Pipe	02-D15-00-1J	BKRU026115G4	14-Aug-09
	02-D15-00-1J	GFLU001212G9	14-Aug-09
	02-D15-00-1J	GFLU001124G11	03-Aug-09
Pipe	02-D15-00-2A	BKRU025972G9	24-Jun-09
	02-D15-00-2A	MHFU001109G11	24-Jun-09
	02-D15-00-2A	BKRU025503G8	23-Jun-09
	02-D15-00-2A	BKRU025663G11	23-Jun-09
	02-D15-00-2A	BKRU026020G11	23-Jun-09
	02-D15-00-2A	BKRU026124G5	23-Jun-09
	02-D15-00-2A	GFLU001299G9	23-Jun-09
Pipe	02-D15-00-2F	MHFU001109G11	24-Jun-09
Pipe	02-D15-00-4B	GFLU001194G10	17-Aug-09
		BKRU026115G4	14-Aug-09
Pipe	02-D15-00-4C	GFLU001231G3	14-Aug-09
		BFLU000357G5	31-Jul-09
		BKRU025599G3	31-Jul-09
		BKRU025599G3	27-Jul-09
		GFLU001221G3	27-Jul-09
Pipe	02-D15-00-5A	MHFU001109G11	24-Jun-09
Pipe	03-D16-00-1A	GFLU001189G1	09-Apr-10
Pipe	03-D16-00-1C	BKRU026459G12	09-Apr-10
		GFLU001189G12	09-Apr-10
Pipe	03-D16-00-1D	BKRU026459G12	14-Apr-10
		CVGU001156G11	07-May-10
Pipe	03-D16-00-1H	CVGU001156G11	07-May-10
		GFLU001210G11	21-Apr-10
		GFLU001299G11	21-Apr-10
Pipe	03-D16-00-1I	BKRU026202G2	03-May-10
		GFLU001195G12	03-May-10
Pipe	03-D16-00-1K	GFLU001127G12	16-Mar-10
Pipe	03-D16-36-8A	GFLU001127G12	16-Mar-10
Pipe	02-D26-00-1C	GFLU001186G9	06-Apr-09
Pipe	02-D26-00-1D	GFLU001163G10	18-Jun-09
		GFLU001172G11	05-May-09
Pipe	02-D26-00-1F	GFLU001190G3	05-Aug-09
		BKRU025624G11	03-Aug-09

TABLE 3-8

**PARCELS UC1 AND UC2 PIPE AND MANHOLE LLRW
BIN DISPOSAL SUMMARY**

Component	Trench Segment ID No.	LLRW Bin^a	Disposal Date
Pipe	02-D26-00-2A	GFLU001191G3	01-Jul-09
		GFLU001201G10	01-Jul-09
		GFLU001244G4	01-Jul-09
		GFLU001186G11	29-Jun-09
		MHFU001304G11	29-Jun-09
		GFLU001126G5	19-Jun-09
		BKRU025819G4	18-Jun-09
		GFLU001104G11	18-Jun-09
		GFLU001163G10	18-Jun-09
		BKRU026017G10	17-Jun-09
		GFLU001183G10	17-Jun-09
		GFLU001206G10	16-Jun-09
		BKRU026354G9	15-Jun-09
		BKRU026468G7	15-Jun-09
		GFLU001056G9	15-Jun-09
Pipe	02-D26-00-2C	GFLU001076G3	23-Apr-09
		BKRU025503G7	22-Apr-09
		DB1189D1	22-Apr-09
		GFLU001039G10	22-Apr-09
		GFLU001127G9	22-Apr-09
		GFLU001183G9	22-Apr-09
		BKRU026177G9	21-Apr-09
		DB928D1	21-Apr-09
		GFLU001014G8	17-Apr-09
		GFLU001031G8	17-Apr-09
		GFLU001104G10	17-Apr-09
		GFLU001016G8	16-Apr-09
		GFLU001279G8	16-Apr-09
		GFLU001149G10	15-Apr-09
		GFLU001278G9	15-Apr-09
Pipe	02-D26-00-2D	GFLU001076G3	23-Apr-09
		GFLU001223G2	23-Apr-09
		GFLU001215G9	20-Apr-09
Pipe	02-D26-00-2G	BKRU026006G4	01-Apr-09
Pipe	02-D26-00-2H	GFLU001158G2	30-Mar-09

TABLE 3-8

**PARCELS UC1 AND UC2 PIPE AND MANHOLE LLRW
BIN DISPOSAL SUMMARY**

Component	Trench Segment ID No.	LLRW Bin^a	Disposal Date
Pipe	02-D26-00-3A	GFLU001126G4 GFLU001244G3	04-May-09 01-May-09
Pipe	02-D26-00-3B	BKRU026177G9	21-Apr-09
Pipe	02-D26-00-3C	GFLU001221G2 BKRU026177G9	29-Apr-09 21-Apr-09
Pipe	02-D26-00-3F	BFLU000377G9 GFLU001073G3 BKRU026332G9 GFLU001169G8 BFLU000152G7 BKRU025012G9 GFLU001040G10 GFLU001059G9 GFLU001165G9 GFLU001262G9	13-Apr-09 13-Apr-09 10-Apr-09 10-Apr-09 09-Apr-09 08-Apr-09 08-Apr-09 08-Apr-09 08-Apr-09 08-Apr-09
Pipe	02-D26-00-3H	GFLU001186G9	06-Apr-09
Pipe	02-D26-00-5A	GFLU001073G3	13-Apr-09
Pipe	02-D26-00-6I	GFLU001043G10	28-Apr-09
Pipe	02-D26-00-8B	BFLU000357G3	01-Apr-09
Manhole	MH251	GFLU001186G11	29-Jun-09
Manhole	MH252	GFLU001278G10	03-Jun-09
Manhole	MH253	GFLU001200G9	02-Jun-09
Manhole	MH254	GFLU001081G10	14-May-09
Manhole		MHFU001646G8	14-May-09
Manhole	MH255	GFLU001037G8	07-May-09
Manhole	MH256	BKRU025441G2	28-Apr-09
Manhole		GFLU001043G10	28-Apr-09
Manhole	MH257	GFLU001225G2	14-May-09
Manhole	MH259	GFLU001033G11	01-Jun-09
Manhole		GFLU001234G10	01-Jun-09
Manhole	MH260	GFLU001165G10	01-Jun-09
Manhole		GFLU001234G10	01-Jun-09
Manhole	MH261	BKRU025441G3	15-Jun-09
Manhole		GFLU001130G8	15-Jun-09
Manhole	MH262	BKRU026198G4	31-Jul-09

TABLE 3-8

**PARCELS UC1 AND UC2 PIPE AND MANHOLE LLRW
BIN DISPOSAL SUMMARY**

Component	Trench Segment ID No.	LLRW Bin^a	Disposal Date
Manhole	MH263	BFLU000054G10	31-Jul-09
Manhole		BKRU026198G4	31-Jul-09
Manhole		GFLU001139G4	31-Jul-09
Manhole	MH264	GFLU001037G8	07-May-09
Manhole	MH265	GFLU001244G3	01-May-09
Manhole		GFLU001221G2	29-Apr-09
Manhole		MHFU001304G10	28-Apr-09
Manhole	MH266	GFLU001172G11	05-May-09
Manhole	MH267	GFLU001186G9	06-Apr-09
Manhole	MH269	GFLU001039G10	22-Apr-09
Manhole	MH270	GFLU001127G9	22-Apr-09
Manhole	MH271	BKRU026177G9	21-Apr-09
Manhole	MH273	GFLU001223G2	23-Apr-09
Manhole	MH274	GFLU001076G3	23-Apr-09
Manhole	MH275	GFLU001159G8	20-Apr-09
		GFLU001206G9	20-Apr-09
Manhole	MH276	GFLU001011G9	15-Apr-09
Manhole	MH277	GFLU001130G7	15-Apr-09
Manhole	MH278	GFLU001011G9	15-Apr-09
Manhole	MH318	BFLU000396G9	27-Apr-09
Manhole	MH359	GFLU001049G10	17-Jun-09
Manhole	MH394	BFLU000396G9	27-Apr-09
Manhole	MH395	BKRU012993G7	27-Apr-09
Manhole	MH398	BKRU012993G7	27-Apr-09
Manhole	MH545	GFLU001279G1	09-Apr-10
Manhole	MH546	BKRU026202G2	21-Apr-10
		GFLU001195G2	21-Apr-10
		GFLU001210G11	21-Apr-10
		GFLU001299G11	21-Apr-10
Manhole	MH547	GFLU001189G12	09-Apr-10
Manhole	MH548	BKRU026459G1	15-Mar-10
		GFLU001210G11	15-Mar-10
Manhole	MH635	GFLU001210G11	15-Mar-10

Notes:

^a LLRW bins were disposed of off-site at either the U.S. Ecology facility in Idaho or the Energy Solutions facility in Clive, Utah.

Abbreviations and Acronyms:

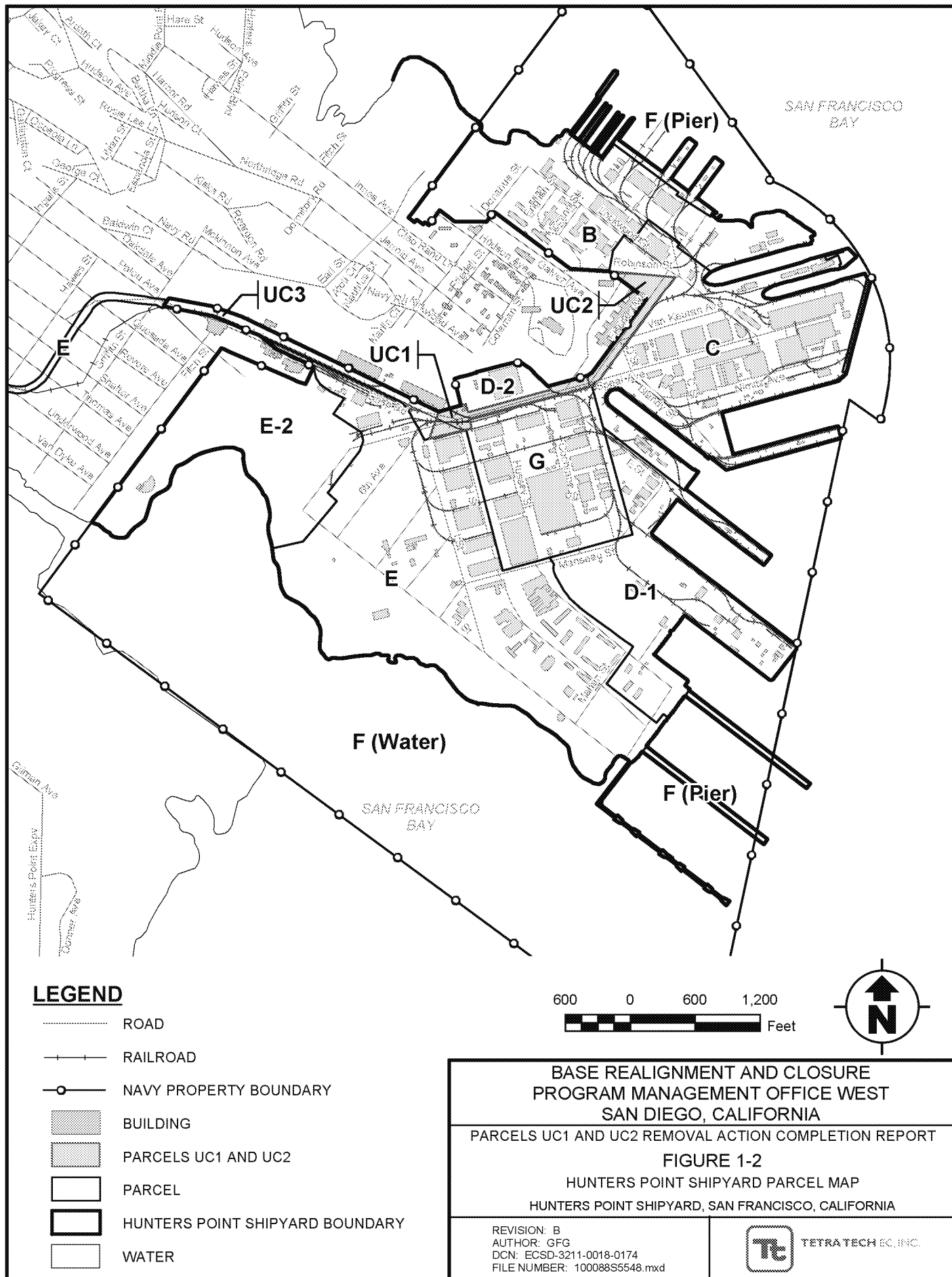
LLRW – low-level radioactive waste

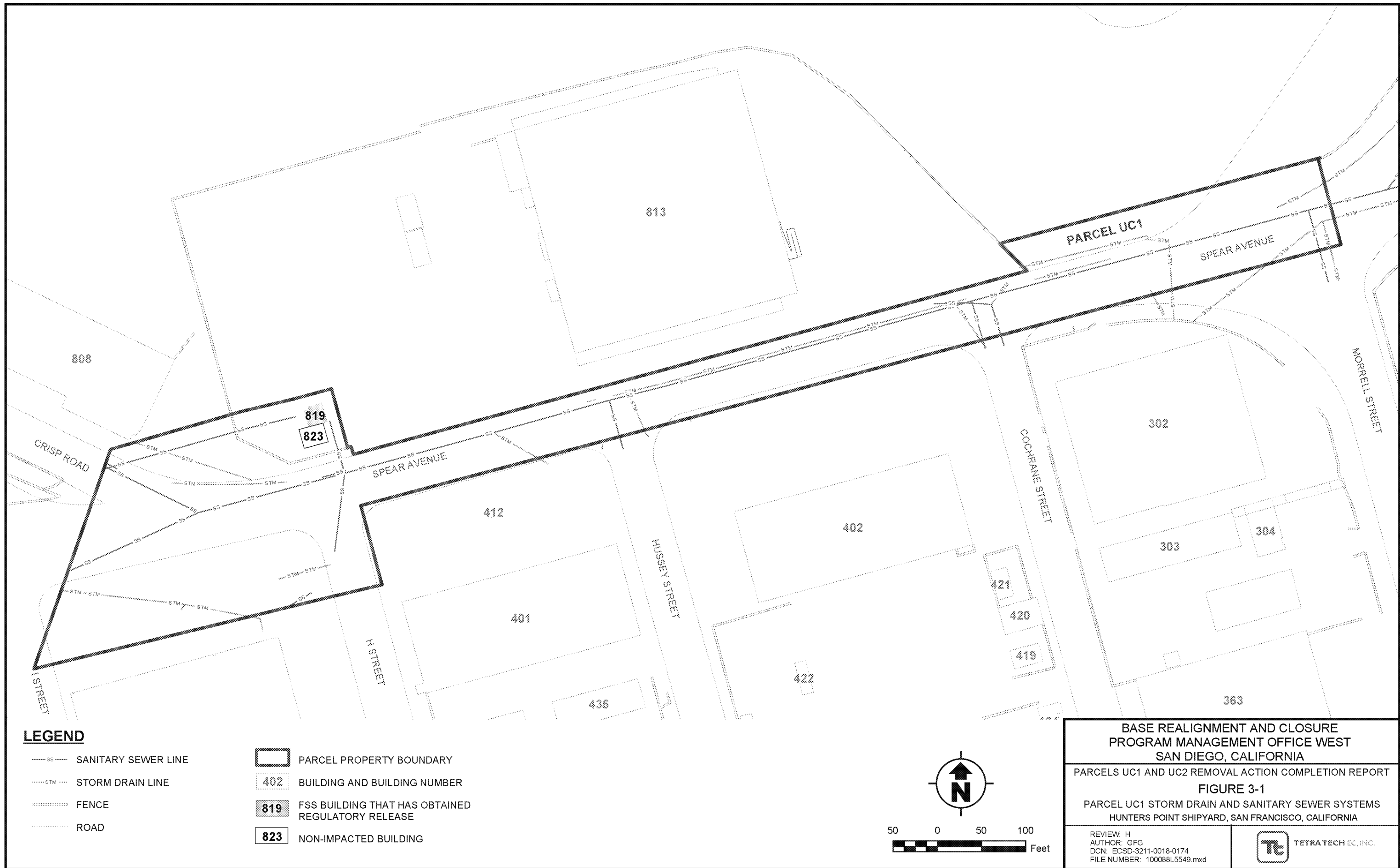
MH – manhole

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FIGURES

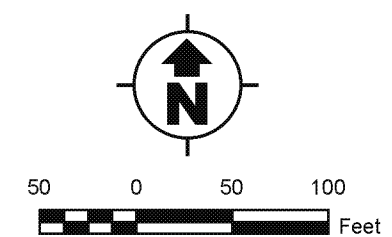
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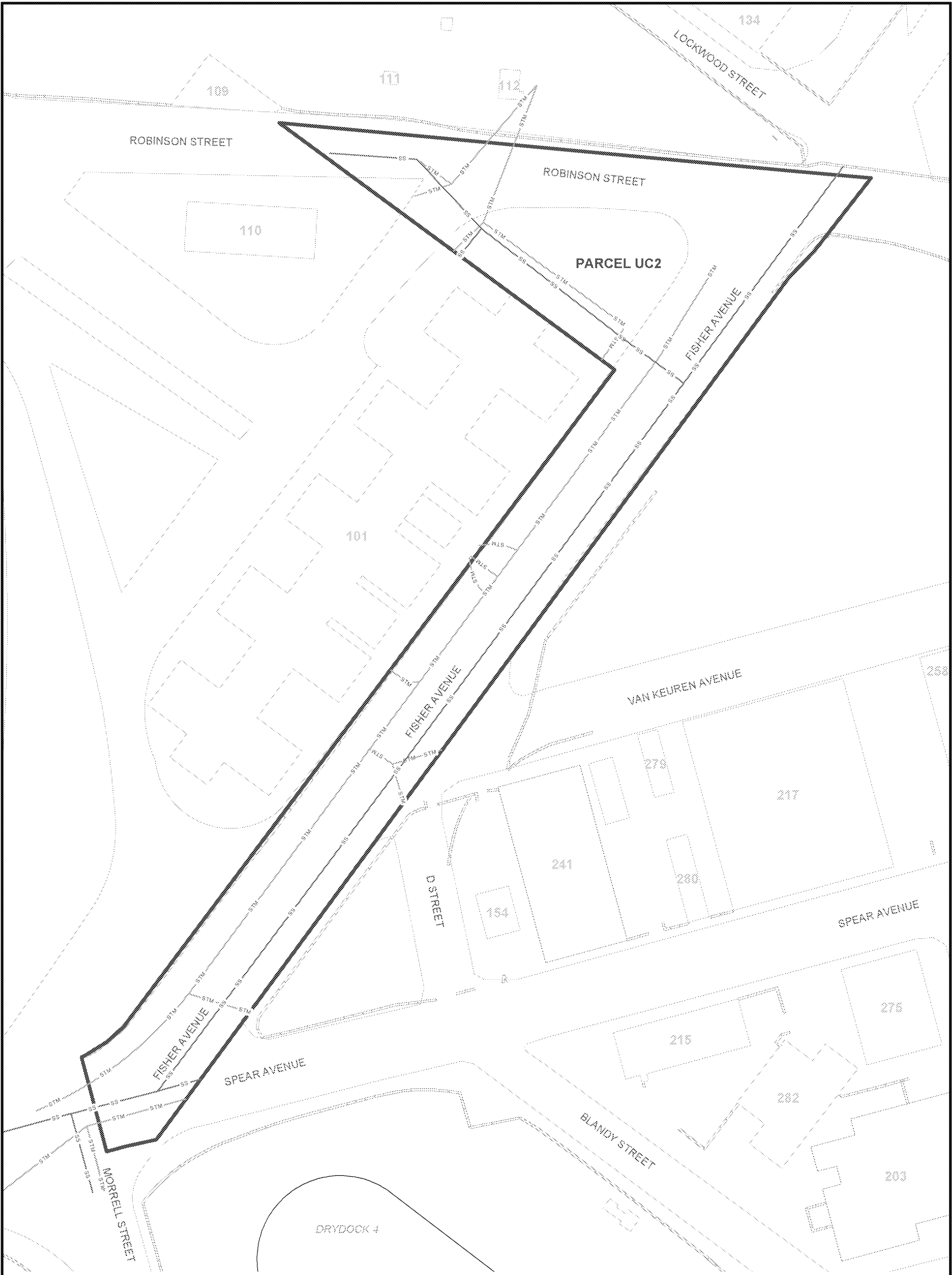


LEGEND

- | | | |
|----------------|---------------------|---|
| —SS— | SANITARY SEWER LINE | PARCEL PROPERTY BOUNDARY |
| - - -STM - - - | STORM DRAIN LINE | BUILDING AND BUILDING NUMBER |
| | FENCE | FSS BUILDING THAT HAS OBTAINED REGULATORY RELEASE |
| | ROAD | NON-IMPACTED BUILDING |

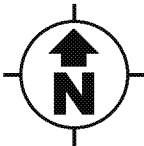
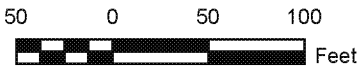



BASE REALIGNMENT AND CLOSURE PROGRAM MANAGEMENT OFFICE WEST SAN DIEGO, CALIFORNIA	
PARCELS UC1 AND UC2 REMOVAL ACTION COMPLETION REPORT FIGURE 3-1 PARCEL UC1 STORM DRAIN AND SANITARY SEWER SYSTEMS HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA	
REVIEW: H AUTHOR: GFG DCN: ECSD-3211-0018-0174 FILE NUMBER: 100088L5549.mxd	TETRA TECH EC, INC.

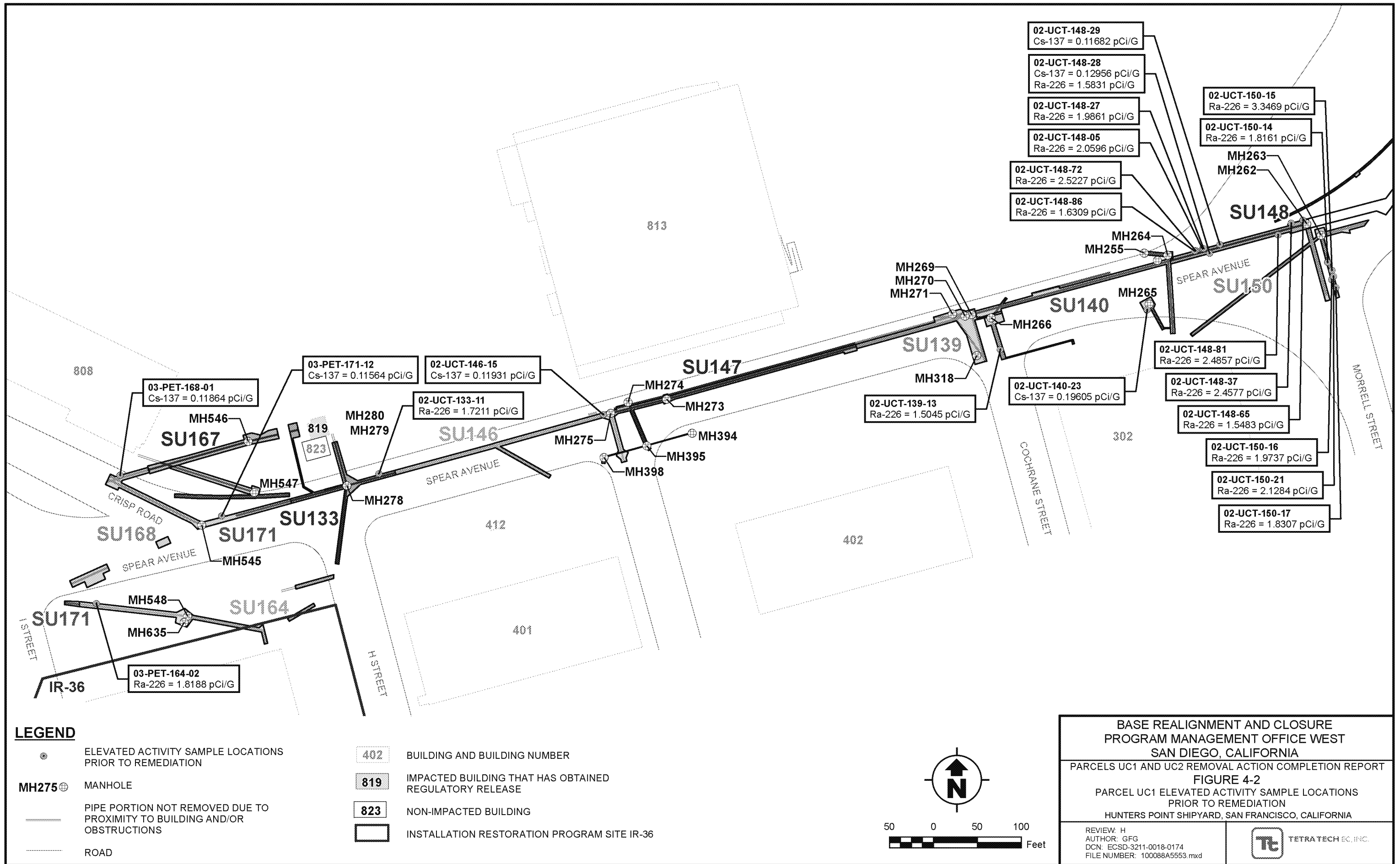


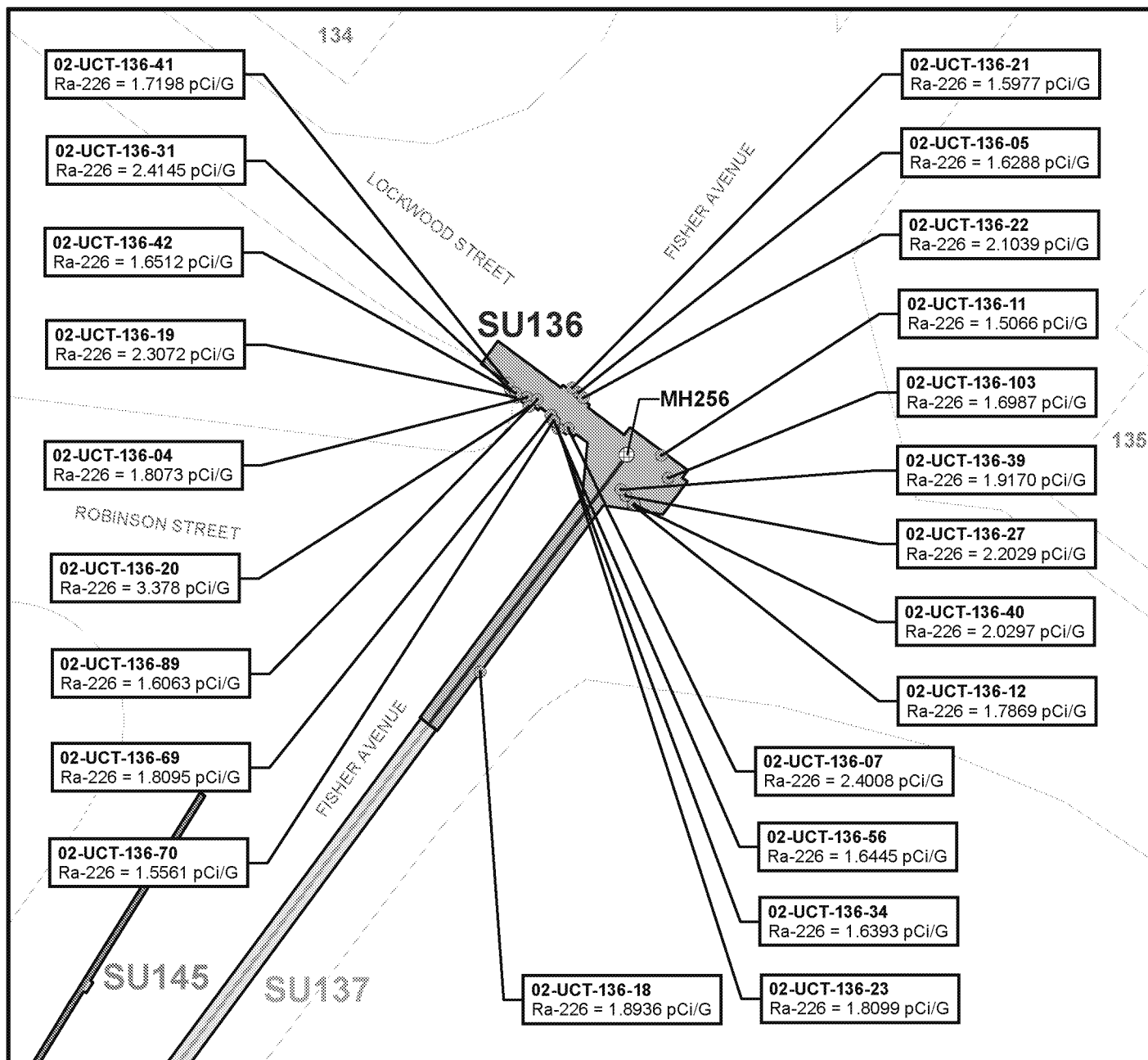
LEGEND

- SS SANITARY SEWER LINE
- STM STORM DRAIN LINE
- FENCE
- ROAD
- PARCEL PROPERTY BOUNDARY
- 402 BUILDING AND BUILDING NUMBER
- SAN FRANCISCO BAY



BASE REALIGNMENT AND CLOSURE PROGRAM MANAGEMENT OFFICE WEST SAN DIEGO, CALIFORNIA	
PARCELS UC1 AND UC2 REMOVAL ACTION COMPLETION REPORT	
FIGURE 3-2	
PARCEL UC2 STORM DRAIN AND SANITARY SEWER SYSTEMS HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA	
REVIEW: F AUTHOR: GFG DCN: ECSD-3211-0018-0174 FILE NUMBER: 100088L5550.mxd	 TETRA TECH EC, INC.





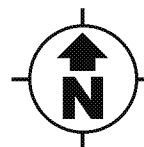
LEGEND

⊗ ELEVATED ACTIVITY SAMPLE LOCATIONS PRIOR TO REMEDIATION

MH256 ⊕ MANHOLE

— ROAD

134 BUILDING AND BUILDING NUMBER



25 0 25 50
Feet

BASE REALIGNMENT AND CLOSURE PROGRAM MANAGEMENT OFFICE WEST SAN DIEGO, CALIFORNIA

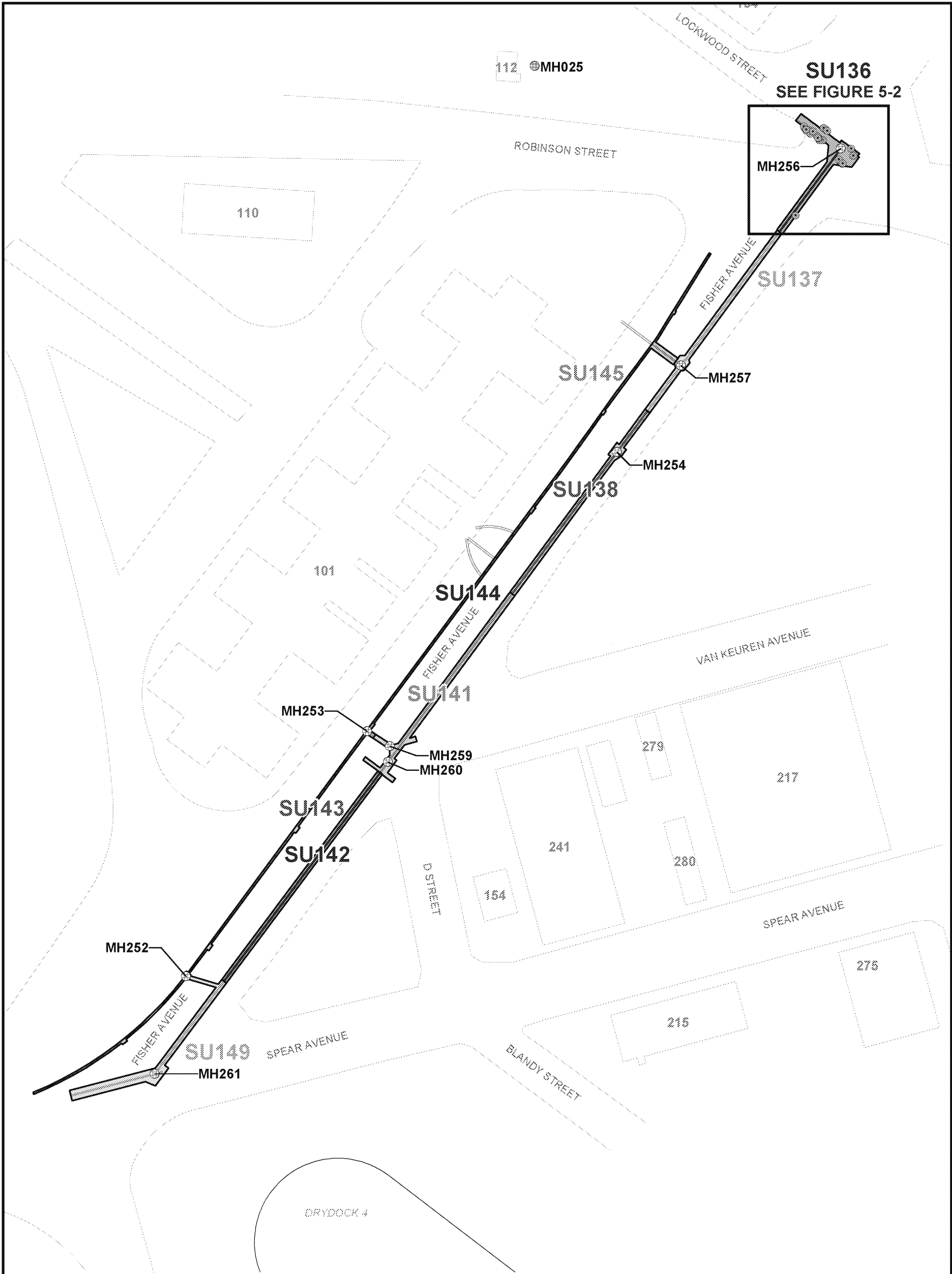
PARCELS UC1 AND UC2 REMOVAL ACTION COMPLETION REPORT
FIGURE 5-2

TRENCH SURVEY UNIT NO. 136
ELEVATED ACTIVITY SAMPLE LOCATIONS PRIOR TO REMEDIATION
HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA

REVISION: E
AUTHOR: GFG
DCN: ECSD-3211-0018-0174
FILE NUMBER: 100088L6081.mxd

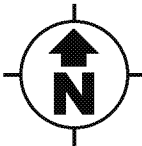
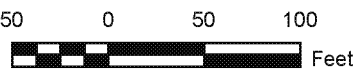


TETRA TECH EC, INC.

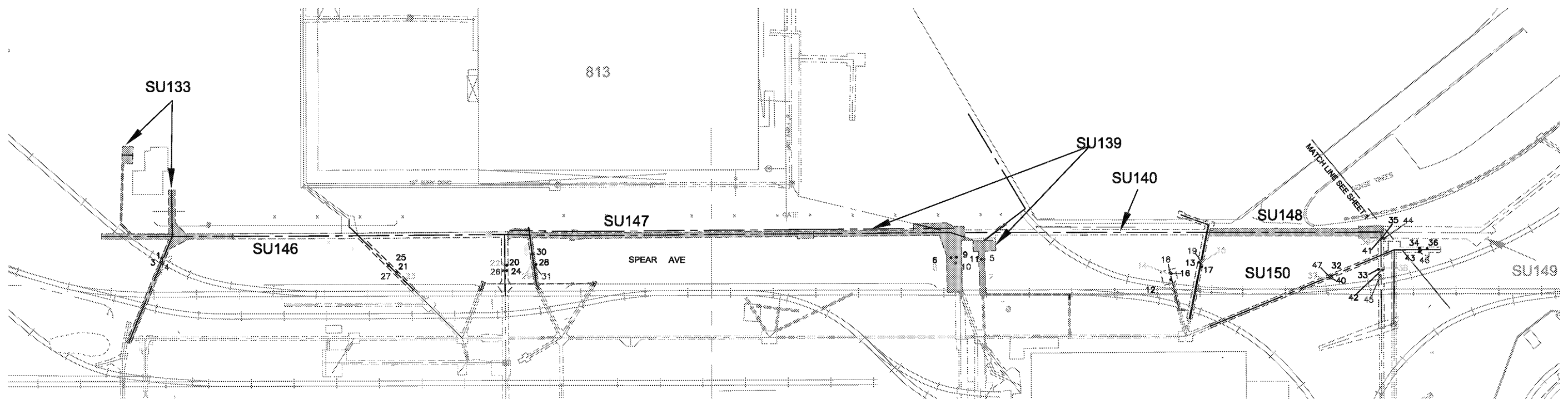


LEGEND

- ELEVATED ACTIVITY SAMPLE LOCATIONS PRIOR TO REMEDIATION
- MH256** MANHOLE
- MH025** MANHOLE LOCATED ON PARCEL C
- PIPE PORTION NOT REMOVED DUE TO PROXIMITY TO BUILDING AND/OR OBSTRUCTIONS
- NOT EXCAVATED AT THE REQUEST OF THE CITY OF SAN FRANCISCO
- ROAD
- BUILDING AND BUILDING NUMBER
- SAN FRANCISCO BAY



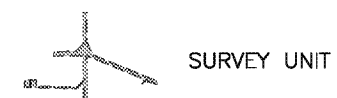
BASE REALIGNMENT AND CLOSURE PROGRAM MANAGEMENT OFFICE WEST SAN DIEGO, CALIFORNIA	
PARCELS UC1 AND UC2 REMOVAL ACTION COMPLETION REPORT FIGURE 5-3 PARCEL UC2 ELEVATED ACTIVITY SAMPLE LOCATIONS PRIOR TO REMEDIATION HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA	
REVIEW: J AUTHOR: GFG DCN: ECSD-3211-0018-0174 FILE NUMBER: 100088A5554.mxd	TETRA TECH EC, INC.



Test No.	Survey Unit	Elevation (ft)	Field Relative Compaction	Test No.	Survey Unit	Elevation (ft)	Field Relative Compaction
1	SU 133	-0.5	97	24	SU 146	-2.0	96
2	SU 133	-1.0	95	25	SU 146	-2.0	97
3	SU 133	-2.0	95	26	SU 146	-3.0	95
4	SU 133	-3.0	95	27	SU 146	-3.0	95
5	SU 139	-0.5	95	28	SU 147	-0.5	97
6	SU 139	-0.5	97	29	SU 147	-1.0	95
7	SU 139	-1.0	96	30	SU 147	-2.0	97
8	SU 139	-1.0	96	31	SU 147	-3.0	96
9	SU 139	-2.0	97	32	SU 150	-0.5	95
10	SU 139	-3.0	98	33	SU 150	-0.5	96
11	SU 139	-3.0	96	34	SU 150	-0.5	95
12	SU 140	-0.5	96	35	SU 150	-0.5	95
13	SU 140	-0.5	95	36	SU 150	-0.5	96
14	SU 140	-1.0	96	37	SU 150	-1.0	95
15	SU 140	-1.0	96	38	SU 150	-1.0	96
16	SU 140	-2.0	97	39	SU 150	-1.0	96
17	SU 140	-2.0	95	40	SU 150	-2.0	96
18	SU 140	-3.0	95	41	SU 150	-2.0	96
19	SU 140	-3.0	96	42	SU 150	-2.0	95
20	SU 146	-0.5	98	43	SU 150	-2.0	96
21	SU 146	-0.5	95	44	SU 150	-3.0	98
22	SU 146	-1.0	97	45	SU 150	-3.0	96
23	SU 146	-1.0	96	46	SU 150	-3.0	95
				47	SU 150	-3.0	96

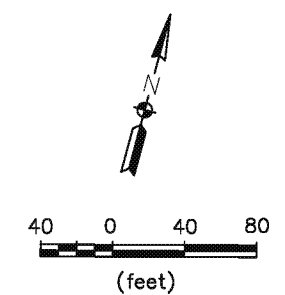
LEGEND

SU1 SURVEY UNIT NUMBER

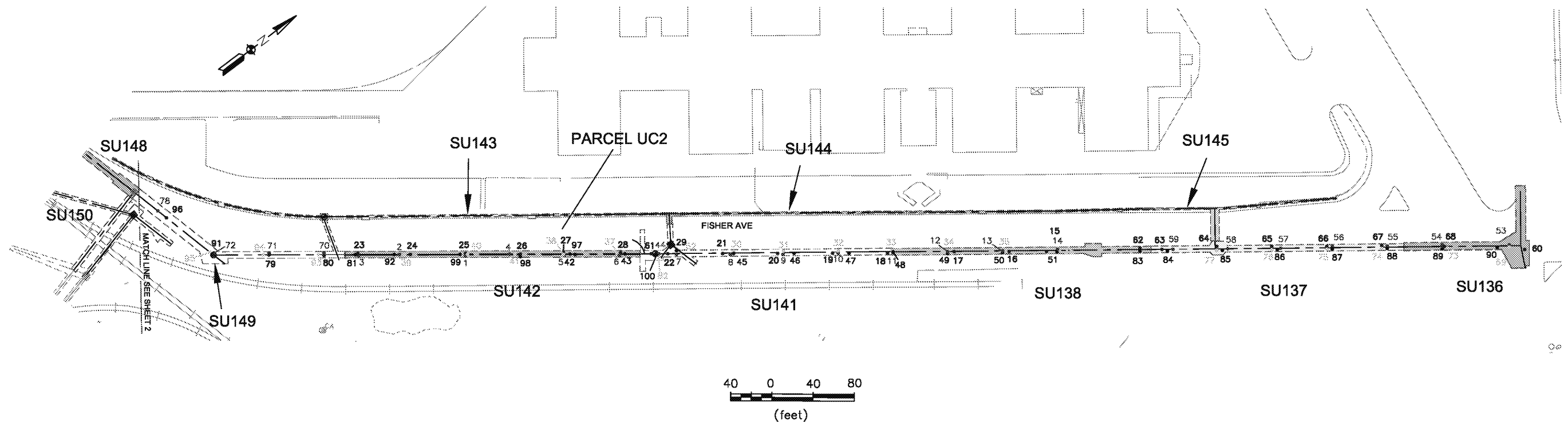


SAMPLE LOCATION

- 1 SAMPLED DEPTH FINISHED GRADE
- 1 SAMPLED DEPTH 1.5–1.0 FEET
- 1 SAMPLED DEPTH 2.5–1.5 FEET
- 1 SAMPLED DEPTH 3–2.5 FEET

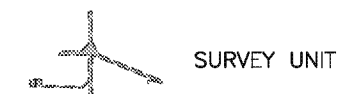


BASE REALIGNMENT AND CLOSURE PROGRAM MANAGEMENT OFFICE WEST SAN DIEGO, CALIFORNIA	
PARCELS UC1 AND UC2 REMOVAL ACTION COMPLETION REPORT	
FIGURE 7-1	
PARCEL UC1 COMPACTION TEST LOCATIONS AND RESULTS	
HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA	
REVISION: AUTHOR: A. CRABTREE PROJECT NO: FILE: SEE BELOW	TETRA TECH EC, INC.



LEGEND

SU1 SURVEY UNIT NUMBER



SAMPLE LOCATION

- 1 SAMPLED DEPTH FINISHED GRADE
- 1 SAMPLED DEPTH 1.5–1.0 FEET
- 1 SAMPLED DEPTH 2.5–1.5 FEET
- 1 SAMPLED DEPTH 3–2.5 FEET

Test No.	Survey Unit	Elevation (ft)	Field Relative Compaction	Test No.	Survey Unit	Elevation (ft)	Field Relative Compaction	Test No.	Survey Unit	Elevation (ft)	Field Relative Compaction	Test No.	Survey Unit	Elevation (ft)	Field Relative Compaction
1	SU 142	–3.0	99	27	SU 142	–1.5	97	53	SU 136	–3.0	95	79	SU 149	–2.0	95
2	SU 142	–3.0	97	28	SU 142	–1.5	95	54	SU 136	–3.0	96	80	SU 149	–2.0	96
3	SU 142	–3.0	95	29	SU 141	FG	97	55	SU 137	–3.0	96	81	SU 142	FG	96
4	SU 142	–3.0	96	30	SU 141	–1.0	95	56	SU 137	–3.0	95	82	SU 141	–1.0	95
5	SU 142	–3.0	96	31	SU 141	–1.0	98	57	SU 137	–3.0	95	83	SU 138	FG	96
6	SU 142	–3.0	99	32	SU 141	–1.0	95	58	SU 137	–3.0	96	84	SU 137	FG	98
7	SU 141	–3.0	97	33	SU 141	–1.0	96	59	SU 137	–3.0	96	85	SU 137	FG	95
8	SU 141	–3.0	99	34	SU 138	–1.0	96	60	SU 136	–2.0	97	86	SU 137	FG	97
9	SU 141	–3.0	97	35	SU 138	–1.0	98	61	SU 141	–2.0	96	87	SU 137	FG	95
10	SU 141	–3.0	97	36	SU 138	–1.0	95	62	SU 138	–2.0	96	88	SU 137	FG	97
11	SU 141	–3.0	98	37	SU 142	–1.0	98	63	SU 137	–2.0	95	89	SU 136	FG	96
12	SU 138	–3.0	96	38	SU 142	–1.0	97	64	SU 137	–2.0	97	90	SU 136	FG	95
13	SU 138	–3.0	98	39	SU 142	–1.0	95	65	SU 137	–2.0	95	91	SU 149	–2.0	95
14	SU 138	–2.5	97	40	SU 142	–1.0	95	66	SU 137	–2.0	96	92	SU 142	FG	95
15	SU 138	–2.0	96	41	SU 142	–1.0	96	67	SU 137	–2.0	95	93	SU 149	–1.0	95
16	SU 138	–2.0	96	42	SU 142	FG	95	68	SU 136	–2.0	97	94	SU 149	–1.0	97
17	SU 138	–2.0	97	43	SU 142	FG	95	69	SU 136	–1.0	97	95	SU 149	–1.0	96
18	SU 141	–2.0	97	44	SU 141	–3.0	95	70	SU 149	–3.0	96	96	SU 149	–2.0	96
19	SU 141	–2.0	97	45	SU 141	FG	95	71	SU 149	–3.0	95	97	SU 142	FG	95
20	SU 141	–2.0	95	46	SU 141	FG	96	72	SU 149	–3.0	96	98	SU 142	FG	95
21	SU 141	–2.0	97	47	SU 141	FG	95	73	SU 136	–1.0	95	99	SU 142	FG	95
22	SU 141	–2.0	95	48	SU 141	FG	95	74	SU 137	–1.0	95	100	SU 141	FG	96
23	SU 142	–2.0	95	49	SU 138	FG	96	75	SU 137	–1.0	96				
24	SU 142	–1.5	95	50	SU 138	FG	95	76	SU 137	–1.0	95				
25	SU 142	–1.5	96	51	SU 138	FG	95	77	SU 137	–1.0	95				
26	SU 142	–1.5	95	52	SU 141	–1.0	96	78	SU 149	–3.0	97				

BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE WEST
SAN DIEGO, CALIFORNIA

PARCELS UC1 AND UC2 REMOVAL ACTION COMPLETION REPORT

FIGURE 7-2

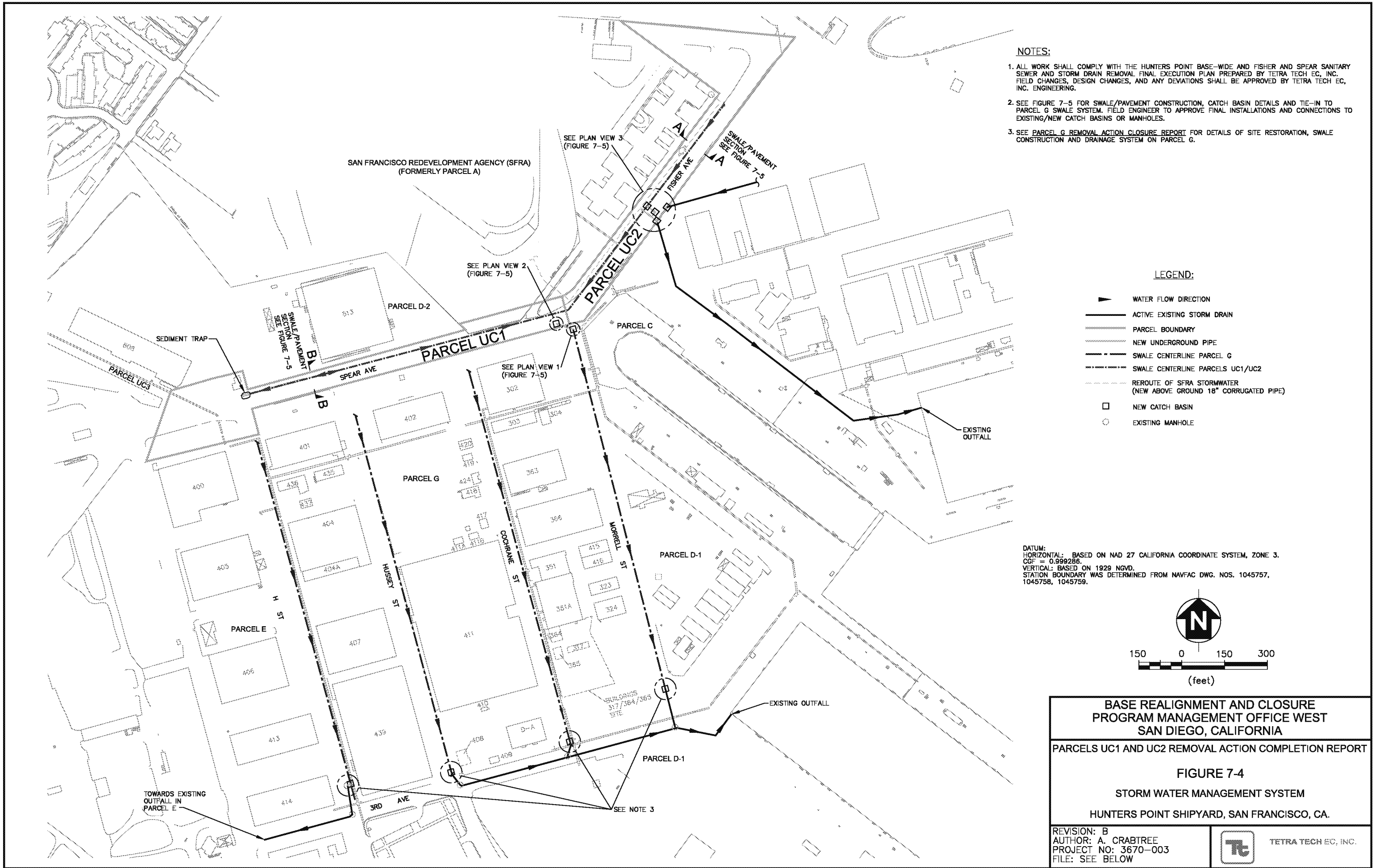
PARCEL UC2 COMPACTION TEST LOCATIONS AND RESULTS

HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA

REVISION:
AUTHOR: A. CRABTREE
PROJECT NO:
FILE: SEE BELOW



TETRA TECH EC, INC.

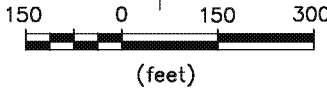


- NOTES:
1. ALL WORK SHALL COMPLY WITH THE HUNTERS POINT BASE-WIDE AND FISHER AND SPEAR SANITARY SEWER AND STORM DRAIN REMOVAL FINAL EXECUTION PLAN PREPARED BY TETRA TECH EC, INC. FIELD CHANGES, DESIGN CHANGES, AND ANY DEVIATIONS SHALL BE APPROVED BY TETRA TECH EC, INC. ENGINEERING.
 2. SEE FIGURE 7-5 FOR SWALE/PAVEMENT CONSTRUCTION, CATCH BASIN DETAILS AND TIE-IN TO PARCEL G SWALE SYSTEM. FIELD ENGINEER TO APPROVE FINAL INSTALLATIONS AND CONNECTIONS TO EXISTING/NEW CATCH BASINS OR MANHOLES.
 3. SEE PARCEL G REMOVAL ACTION CLOSURE REPORT FOR DETAILS OF SITE RESTORATION, SWALE CONSTRUCTION AND DRAINAGE SYSTEM ON PARCEL G.

LEGEND:

- ▶ WATER FLOW DIRECTION
- ACTIVE EXISTING STORM DRAIN
- PARCEL BOUNDARY
- NEW UNDERGROUND PIPE
- SWALE CENTERLINE PARCEL G
- SWALE CENTERLINE PARCELS UC1/UC2
- REROUTE OF SFRA STORMWATER (NEW ABOVE GROUND 18" CORRUGATED PIPE)
- NEW CATCH BASIN
- EXISTING MANHOLE

DATUM:
HORIZONTAL: BASED ON NAD 27 CALIFORNIA COORDINATE SYSTEM, ZONE 3.
CGF = 0.999286.
VERTICAL: BASED ON 1929 NGVD.
STATION BOUNDARY WAS DETERMINED FROM NAVFAC DWG. NOS. 1045757, 1045758, 1045759.



BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE WEST
SAN DIEGO, CALIFORNIA

PARCELS UC1 AND UC2 REMOVAL ACTION COMPLETION REPORT

FIGURE 7-4

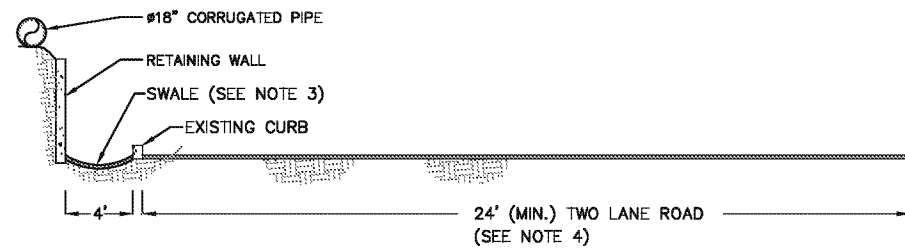
STORM WATER MANAGEMENT SYSTEM

HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA.

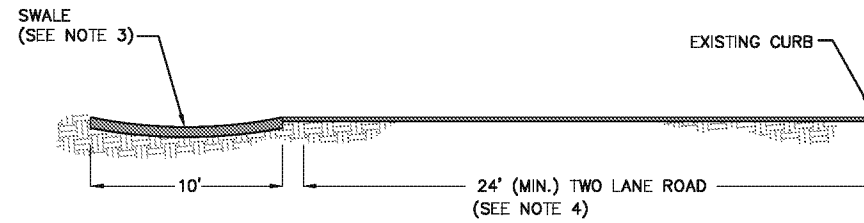
REVISION: B
AUTHOR: A. CRABTREE
PROJECT NO: 3670-003
FILE: SEE BELOW



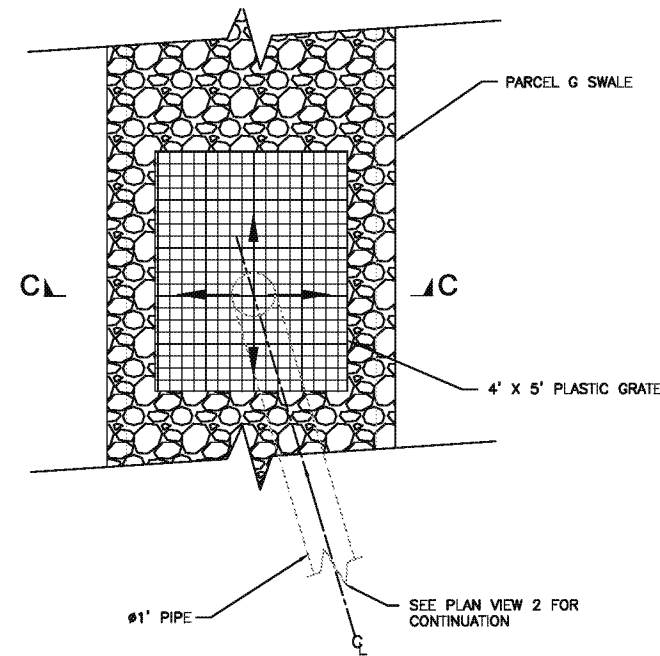
TETRA TECH EC, INC.



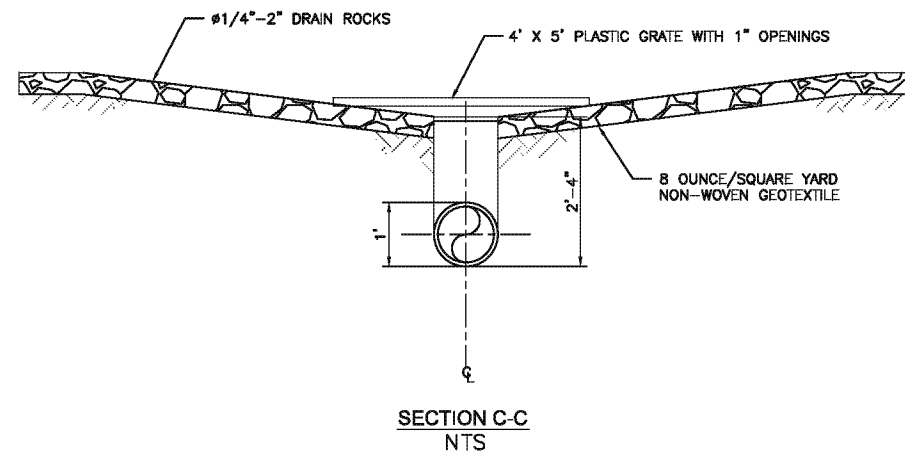
SECTION A-A
(FROM FIGURE 7-4)
NTS



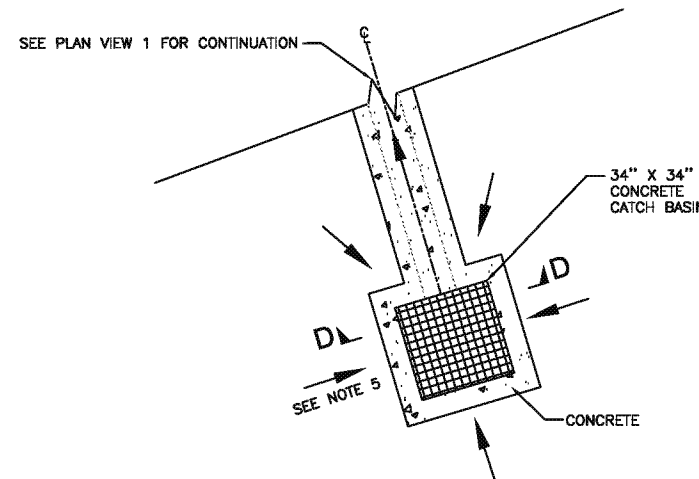
SECTION B-B
(FROM FIGURE 7-4)
NTS



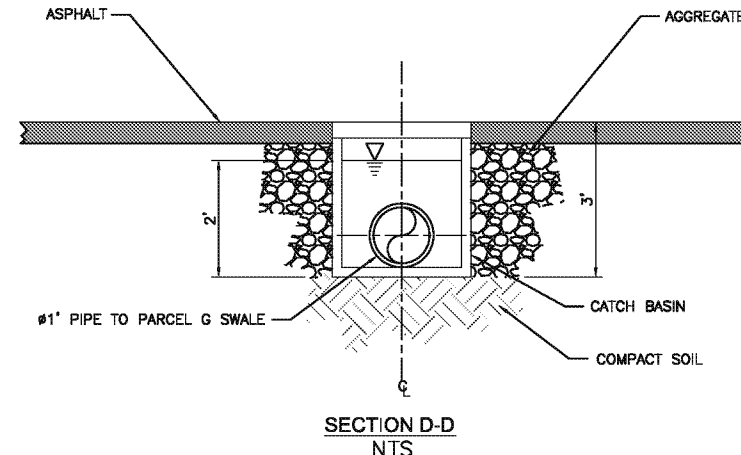
PLAN VIEW 1
(FROM FIGURE 7-4)
NTS



SECTION C-C
NTS



PLAN VIEW 2
(FROM FIGURE 7-4)
NTS



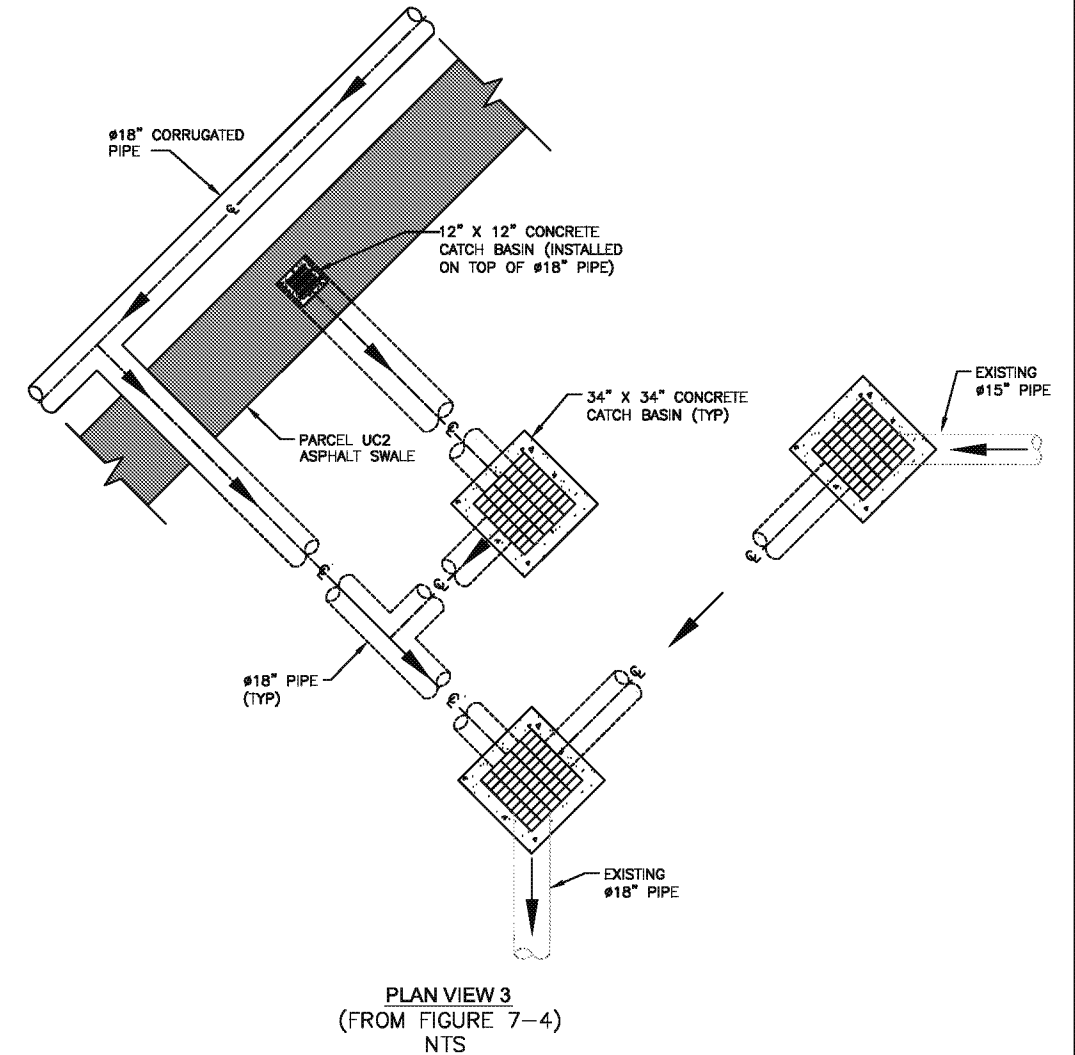
SECTION D-D
NTS

NOTES:

1. ALL WORK SHALL COMPLY WITH THE HUNTERS POINT BASE-WIDE AND FISHER AND SPEAR SANITARY SEWER AND STORM DRAIN REMOVAL FINAL EXECUTION PLAN PREPARED BY TETRA TECH EC, INC. FIELD CHANGES, DESIGN CHANGES, AND ANY DEVIATIONS SHALL BE APPROVED BY TETRA TECH EC, INC. ENGINEERING.
2. SEE FIGURE 7-4 FOR SWALE LAYOUT AND ROUTING. FIELD ENGINEER TO APPROVE FINAL INSTALLATIONS AND CONNECTIONS TO EXISTING/NEW CATCH BASINS OR MANHOLES.
3. PAVEMENT IS 2\"
4. PAVEMENT IS 4\"
5. STORMWATER FLOW FROM PARCELS UC1/2 (FISHER/SPEAR AVENUE) IS ROUTED TO NEW CATCH BASIN AND TIES INTO PARCEL G SWALE.

LEGEND:

→ WATER FLOW DIRECTION



PLAN VIEW 3
(FROM FIGURE 7-4)
NTS

BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE WEST
SAN DIEGO, CALIFORNIA

PARCELS UC1 AND UC2 REMOVAL ACTION COMPLETION REPORT

FIGURE 7-5

DRAINAGE DETAILS AND TIE-IN TO PARCEL G SWALE
HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA.

REVISION: A
AUTHOR: DJM
PROJECT NO: 3670-003
FILE: SEE BELOW



TETRA TECH EC, INC.

PHOTOGRAPHS

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Photograph 4-1: Typical fill material over subsurface bedrock formation.



Photograph 4-2: DON's contractor installing new sanitary sewer bypass.



Photograph 4-3: Excavation of Trench Survey Unit 147 near Building 813 on Parcel D-2.



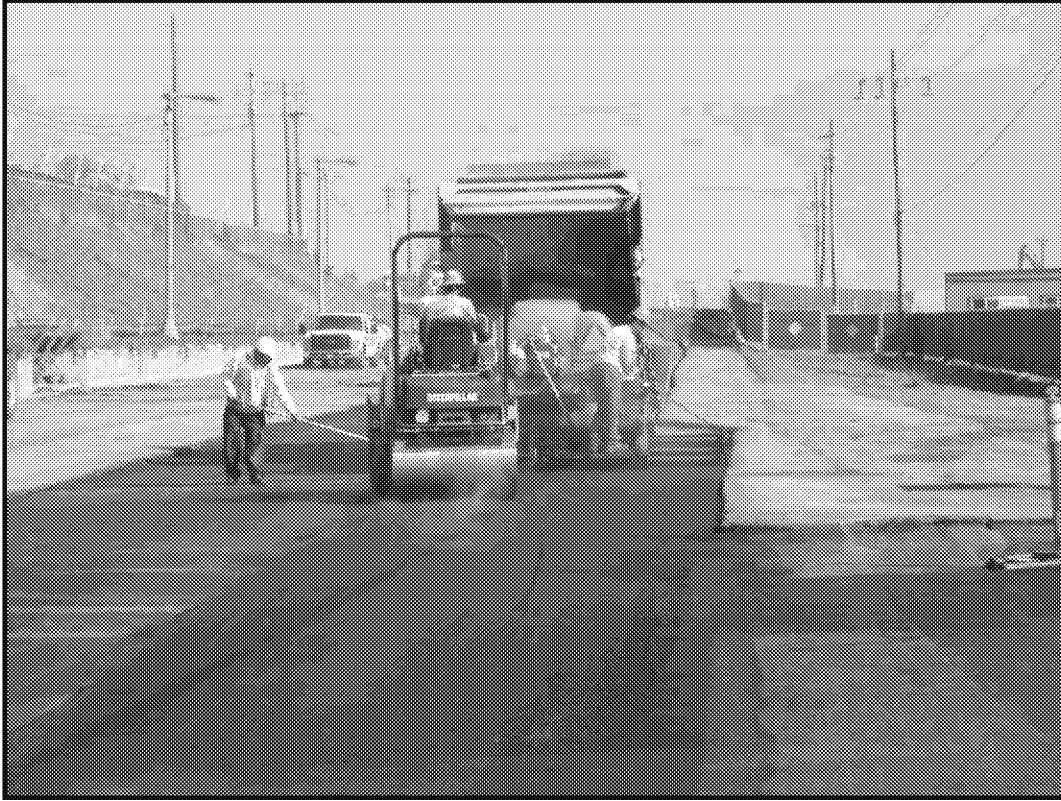
Photograph 5-1: Vertical trench walls and bedrock formation in Parcel UC2.



Photograph 6-1: Building 819 with 1-foot separation from Building 823.



Photograph 6-2: Sump area at Building 819 where trench segment 02-D26-00-2G (Trench Survey Unit 133) excavation was halted.



Photograph 7-1: Road paving activities for site restoration in Parcel UC2.



Photograph 7-2: Painting road stripes during site restoration activities.